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FISH POPULATIONS OF CARNATION CREEK AND OTHER BARKLEY SOUND STREAMS 1978-1980

by

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ABSTRACT

Andersen, B. C. 1981. Fish populations of Carnation Creek and other Barkley Sound streams 1978-1980. Can. Data Rep. Fish. Aquat. Sci. 302: iii + 150 p.

A summary of fish population data, collected as part of the Carnation Creek Experimental Watershed Project is presented. The time period covered is January 1978 to December 1980.

Key words: Watershed study, coho, chum, steelhead, cutthroat, sculpin, logging, Carnation Creek.

RÉSUMÉ

Andersen, B. C. 1981. Fish populations of Carnation Creek and other Barkley Sound streams 1978-1980. Can. Data Rep. Fish. Aquat. Sci. 302: iii + 150 p.

On présente un résumé des données sur les populations de poisson, recueillies dans le cadre d'un projet d'étude expérimentale du bassin hydrographique du ruisseau Carnation, de janvier 1978 à décembre 1980.

Mots-clefs: étude du bassin hydrographique, saumon coho, saumon kéta, truite arc-en-ciel anadrome, truite fardée, chabot, abattage du bois, ruisseau Carnation.

INTRODUCTION

The Carnation Creek Experimental Watershed Project started in 1970 with the initiation of pre-logging studies (Narver and Chamberlain 1976). Road construction started in January 1975 and logging started in the fall of 1975. Most of the road construction was completed by the end of the 1977-1978 winter. Logging was completed in June 1981 (Fig. 2).

The basic rational for the study, the study sites, adjacent study streams (Fig. 1), and methods used in fish studies have all been described (Narver and Andersen 1974). All comparisons in this report have reference to Narver and Andersen (1974), Andersen and Narver (1975), and Andersen (1978). This report covers the period January 1978 to December 1980 with some summaries of data from 1970-1980.

RESULTS

ADULT STUDIES

Coho

There has been a marked increase in the return of jack coho in 1978-80, of large males in 1979 and 1980, and of females in 1979. This was probably a reflection of a large increase in coho smolt output in 1978-80.

	Jack		Large male		Female		
Year	Return	Mean fork length (cm)	Return	Mean fork length (cm)	Return	Mean fork length (cm)	Total large
1971[a]	62	35.0	108	55.7	81	61.0	189
1972	76	33.0	87	65.2	75	68.6	162
1973	43	33.8	85	62.8	71	66.8	164[b]
1974	71	35.6	82	58.1	66	66.9	148
1975	54	33.4	89	65.4	69	65.9	158
1976	35	30.1	68	56.1	55	63.5	128
1977	53	34.7	76	57.3	51	65.2	127
1978	233	33.5	46	60.7	56	65.3	102
1979	114	33.2	136	58.2	176	64.0	312
1980	101	34.8	110	57.0	65	66.8	175[c]
Mean	84.2		88.7		76.5		166.0

[a] The 1971 run was estimated using mark and recovery
[b] Eight not sexed but included in total.
[c] Plus 5-10% for uncounted large coho.

The age compositions of adult coho are presented in Table 1.

In all 3 years (1978-1980) mean fork lengths of returning coho were within the mean length range of previous years. The length distributions and mean lengths for adult coho by age and sex are given in Table 3.

Time of entry into the stream continues to be strongly dependent on stream discharge levels and consequently is variable between years (Table 2). In all 3 years (1978-1980) at least 90% of the run had entered by the first 10 days of November.

Chum

The estimates of chum salmon spawning escapement (above and below fence) in Carnation Creek were:

Year	Escapement	Sex ratio ♂:♀
1970	1200	1.4:1
1971	1000	.96:1
1972	1700	1.6:1
1973	4168	1.4:1
1974	3060	1.1:1
1975[a]	1200	
1976	1500	1.2:1
1977	1700	
1978	3300	1.1:1
1979	450	
1980	3000	

[a]The 1975 estimate was very rough due to high stream discharge levels.

Weekly counts of chum salmon, by sex, passing Carnation Creek fence in 1978-1980 are presented in Table 4.

Length distributions, by sex, are given in Table 5. The mean fork lengths were:

Year	Male (cm)	Female (cm)
11 yr mean (1970-1980)	72.9	70.5
1978	76.1	72.2
1979	73.7	72.0
1980	68.8	67.4

The dominant age group of chum adults continued to be three winters in the ocean as determined by otoliths (Table 6).

Pink

In early September 1980 approximately 40 pink salmon spawned above and below the counting fence. This was unusual, in previous years a maximum of 2 pair had been observed and only below the fence. In most years no pinks were observed.

Steelhead and Cutthroat

Adult steelhead and cutthroat sampling at the counting fence is summarized in Table 7. The number of fish sampled is not an indication of the total return of either steelhead or cutthroat because the fence was not operated during the winter of 1978-79 and 1979-80. Also when the fence is fishing for juveniles from mid-March to August high stream discharge can flood out the fence and allow adult fish to pass upstream unobserved.

JUVENILE STUDIES

Downstream Migrants

Outmigrations of juvenile salmonids in relation to date, water temperature and discharge are presented in Fig. 3, 4 5 . Total counts for 1978-1980 are summarized in Table 8.

Coho

A summary of juvenile coho outmigration data by age:

			I+ ≤60 mm		II+				
Year	Fry run	I+ <60 mm run	Run	Mean length (mm)	Run	Mean length (mm)	Total fish ≤60 mm	% II+ fish ≤60 mm	50% point of smolt run
1971[a]	122774	62	1000	76.6	1415	98.3	2415	59	May 14
1972	25664	40	1305	83.3	574	108.0	1879	30	May 4
1973	19183	141	974	77.4	776	101.9	1750	44	May 8
1974	21600	184	1030	74.2	1444	99.2	2474	58	May 9
1975	31364	128	1119	75.2	874	94.6	1993	44	May 9
1976	24714	206	1788	72.0	1068	92.8	2856	37	May 10
1977	7877	103	1522	78.1	935	97.5	2457	38	May 4
1978	13972	27	3841	83.6	778	100.0	4619	17	May 2
1979	5285	19	2843	80.6	668	96.3	3511	19	Apr 30
1980	27654	21	3555	85.4	991	104.6	4546	22	Apr 30

[a]Temporary fence, run numbers are very rough.

The table on the preceding page is a summary of data from 1970-80 showing a very large increase (2-3 times the 1971-77 mean) in numbers of age I+ smolts in 1978, 1979 and 1980. The numbers of age II+ smolts in 1978 and 1979 decreased 20-30% from the 1971-77 mean.

In 1978-80, as in previous years, the coho smolts migrated primarily in late April and early May with major peaks corresponding to rising stream discharge (Fig. 3, 4, and 5). In all 3 years the 50% point of the coho smolt run occurred approximately 1 week earlier than the mean date for the previous 7 years (Table 9).

The weekly mean lengths of smolts show similar trends to previous years (Fig. 6). The overall mean length of age I+ coho smolts in all 3 years were 5-12% longer than the mean of the previous 7 years.

In 1978 and 1979 coho fry runs were much smaller than the mean for the previous 7 years with the 1979 run being smallest of all years studied. The 1980 run was well above the mean and probably was a reflection of a large increase in the number of female spawners in 1979. The 50% point of the coho fry run continues the trend started in 1977 of being much earlier than in previous years (Table 9). Mean lengths of coho fry in the downstream run are summarized in Table 10. A paper examining the coho fry runs is in press (Hartman et al.).

Chum Salmon

Chum fry outmigrations from above the fence:

6 yr mean (1972-1977)	61,192
1978	52,930
1979	6,025
1980	129

The 50% point of the chum fry run was similar to previous years in 1979, 2 weeks earlier in 1978, and, due to the very small size of run, not meaningful in 1980 (Table 9). Mean lengths of chum fry in the downstream runs are summarized in Table 10.

Steelhead and Cutthroat

A summary of juvenile steelhead and cutthroat trout outmigrations for the years 1971-1980, separated into fish over and under 100 mm, is given on the following page:

	Steelhead				Cutthroat		
	>100 mm	>100 mm			<100 mm	>100 mm	
Year	Run	Run	Mean length	50% point of run	Run	Run	Mean length
1971[a]	308	167	143.3	May 20	10	19	133.7
1972	39	59	153.2	Jun 9	-	4	155.8
1973	113	93	134.6	May 23	8	24	135.0
1974	179	78	144.5	May 22	7	48	144.9
1975	128	68	143.8	May 27	34	58	137.5
1976	301	113	133.9	May 24	16	78	129.3
1977	176	106	131.1	May 9	24	93	128.6
1978	7	103	139.0	May 10	7	60	122.6
1979	1	20	140.1	May 6	3	25	125.2
1980	10	51	161.9	May 9	6	60	141.7

[a]Temporary fence, run numbers very rough.

The 50% points of steelhead smolt outmigration continues a trend, that started in 1977, of being much earlier than in previous years. The numbers of both steelhead and cutthroat under 100 mm show a marked decline in the last 3 years, while numbers of fish 100 mm and over have also had a marked, but somewhat lesser, decline. Mean length of 1980 100 mm and over steelhead shows a very large increase over previous years.

The age compositions and mean lengths of juvenile steelhead and cutthroat in the downstream migrations are presented in Table 11 and Fig. 7.

Resident Fish

The basic data on density and biomass for 1978, 1979 and 1980 are in Appendix I to XI and growth in Appendix XII. The late summer population estimate for the lowest 3070 m of Carnation Creek are given in Table 12.

A summary of late summer population estimates for lower Carnation Creek by species, year and age:

	Coho		Rainbow				Cutthroat				
Year	0	I	0	I	II	III	0	I	II	III	C. aleuticus
1970	14129	790	1685	694	392						
1971	11842	1286	3451	501	119	128					
1972	9252	702	1597	386	58						2292
1973	9071	1229	5117	229	101	9					4539

REFERENCES

Andersen, B. C. 1978. Fish populations of Carnation Creek and other Barkley Sound streams - 1975-1977. Fish. Mar. Serv. Data Rep. 89: 118 p.

Andersen, B. C., and D. W. Narver. 1975. Fish populations of Carnation Creek and other Barkley Sound streams - 1974: data record and progress report. Fish. Res. Board Can. MS Rep. 1351: 73 p.

Hartman, G. F., B. C. Andersen, and J. C. Scrivener. 1981. The seaward movement of coho salmon fry in Carnation Creek, an unstable coastal stream in British Columbia. Submitted to the Canadian Journal of Fisheries and Aquatic Sciences.

Narver, D. W., and B. C. Andersen. 1974. Fish populations of Carnation Creek and other Barkley Sound streams - 1970-1973: data record and progress report. Fish. Res. Board Can. MS Rep. 1303: 115 p.

Narver, D. W., and T. W. Chamberlin. 1976. Carnation Creek - an experiment towards integrated resource management. Fish. Mar. Serv. Pac. Biol. Sta. Circ. 104: 20 p.

Table 1. Age composition of adult coho salmon run in Carnation Creek 1978, 1979, 1980.

		Total age							Freshwater				Ocean		
		1.+	2.+	Total	1.1+	2.1+	3.1+	Total	1.	2.	3.	Total	.+	.1+	Total
1978															
♂	n	173	44	217	31	16	0	47	204	60	0	264	233	47	280
	%	79.7	20.3		66.0	34.0	0		77.3	22.7			83.2	16.8	
♀	n	0	0	0	32	20	0	52	32	20	0	52	0	56	56
	%	0	0		61.5	38.5	0		61.5	38.5	0		0	100.0	
Total	n	173	44	217	63	36	0	99	236	80	0	316	233	103	336
	%	79.7	20.3		63.6	36.4	0		74.7	25.3	0		69.3	30.7	
1979															
♂	n	81	28	109	111	10	0	121	192	38	0	230	114	136	250
	%	74.3	25.7		91.7	8.3	0		83.5	16.5	0		45.6	54.4	
♀	n	0	0	0	141	27	0	168	141	27	0	168	0	176	176
	%	0	0		83.9	16.1	0		83.9	16.1	0		0	100.0	
Total	n	81	28	109	252	37	0	289	333	65	0	398	114	312	426
	%	74.3	25.7		87.2	12.8			83.7	16.3			26.8	73.2	
1980															
♂	n	68	30	98	82	17	0	99	150	47	0	197	101	110	211
	%	69.4	30.6		82.8	17.2	0		76.1	23.9			47.9	52.1	
♀	n	0	0	0	55	7	0	62	55	7	0	62	0	65	65
	%	0	0		88.7	11.3	0		88.7	11.3				100	
Total	n	68	30	98	137	24	0	161	205	54	0	259	101	175	276
	%	69.4	30.6		85.1	14.9	0		79.2	20.8			36.6	63.4	

NOTE: Number of adult coho aged can be less than total run due to unreadable scales or no scale being taken.

Table 2. Weekly fence count of coho salmon into Carnation Creek by ocean age and sex in 1978, 1979, 1980.

1978						1979						1980					
				Total						Total						Total	
Week	♀ n	♂(.1+) n	Jack n	n	Accum. %	Week	♀ n	♂(.1+) n	Jack n	n	Accum. %	Week	♀ n	♂(.1+) n	Jack n	n	Accum. %
Aug 22	0	0	2	2	.6												
Sep						Sep						Sep					
3-4	0	0	4	4	1.8	4-8	14	21	25	60	14.1	2	0	3	4	7	2.5
10-16	3	0	48	51	17.0	9-15	7	8	15	30	21.1	7-13	0	0	6	6	4.7
17-23	2	0	17	19	22.7	16-22	0	0	0	0	21.1	14-20	0	4	13	17	10.9
24-30	1	2	26	29	31.3	23-29	9	3	20	32	28.6	21-27	0	2	18	20	18.1
Oct						Oct						Oct					
1-7	0	1	12	13	35.2	S30-6	4	2	12	18	32.9	S28-04	6	30	37	73	44.6
8-14	1	1	27	29	43.9	7-13	0	0	0	0	32.9	5-11	2	1	1	4	46.0
15-21	0	0	1	1	44.2	14-20	1	1	4	6	34.3	12-18	0	0	1	1	46.4
22-28	11	6	22	39	55.8	21-27	116	85	36	237	89.9	19-25	1	5	1	7	48.9
29-N4	5	0	7	12	59.4	28-N3	6	6	0	12	92.7	26-N1	13	20	4	37	62.3
Nov						Nov						Nov					
5-11	24	31	61	116	94.0	4-10	0	0	0	0	92.7	2-8	38	43	15	96	97.1
12-18	1	1	2	4	95.2	11-17	2	2	2	6	94.1	9-15	1	0	0	1	97.5
19-25	0	0	0	0	95.2	18-24	7	5	0	12	96.9	16-22	4	2	1	7	100.0
26-D2	2	3	1	6	97.0	25-D1	6	1	0	7	98.6	23-29	0	0	0	0	
Dec						Dec						Dec					
3-9	2	1	1	4	98.2	2-8	3	1	0	4	99.5	N30-6	0	0	0	0	
10-16	4	0	2	6	100.0	9-15	1	1	0	2	100.0	7-13	0	0	0	0	
Total n	56	46	233	335			176	136	114	426			65	110	101	276	
Sex ratio large ♂ : ♀				.82 : 1				large ♂ : ♀		.77 : 1				large ♂ : ♀		1.69 : 1	

NOTE: During a period of high tide and high stream flow on November 1, 1980, several large coho were observed to escape over the fence, considered to be 5-10% of run.

Table 3. Length frequency and mean length of adult coho salmon in Carnation Creek by ocean age and sex 1978, 1979 and 1980.

Fork length (cm)	Jacks (.+)			large males (.1+)			Females (.1+)		
	1978	1979	1980	1978	1979	1980	1978	1979	1980
22		1							
23	2								
24		1	1						
25	1	1	2						
26	2	2							
27	5	3	2						
28	13	6	5						
29	10	4	5						
30	12	8	2						
31	23	11	4						
32	20	6	12						
33	36	20	12						
34	20	6	9						
35	16	12	9			1			
36	29	10	6						
37	14	5	3						
38	10	6	4		1	1			
39	10	4	6			1			
40	3	3	4	1	1	3			
41	2	1	6		2				
42	4	1	2			3			
43			4		1	1			
44	1		1	1	2			1	
45		1			2	3		1	
46					2	1			
47			1	1	1	1			
48			1		2	5		1	
49				1	3	8	2	1	
50				2	1	5		2	
n	233	112	101						
Mean (cm)	33.5	33.2	34.8						
S	3.652	3.977	4.860						

Table 3 (cont'd)

Fork length (cm)	Large males (.1+)			Females (.1+)		
	1978	1979	1980	1978	1979	1980
51	1	6	4	2	3	1
52		4	1		3	
53	1	7	8		4	
54	1	3	2		3	1
55	3	10	4	1	4	1
56	2	5	3	1	1	
57	2	8	2		1	1
58	1	14	3	1	5	1
59	3	5	2	1	6	2
60	4	9	5	1	6	1
61	3	6	7	1	7	2
62	1	4	3	3	10	5
63	1	1	3	2	7	3
64	2	5	2	5	13	2
65	3	8	3	7	12	
66	1	2	4	2	10	3
67	3	3	5	3	19	5
68		4	2	4	21	6
69	2	1		7	7	6
70	2	5	4	5	8	7
71		2	1	3	9	4
72	1	2	2		2	6
73		3	2	3	5	6
74		1	3	1	2	
75				1	1	1
76						
77			2		1	
78	4					
n	47	136	110	56	176	64
Mean (cm)	60.9	58.2	57.0	65.3	64.0	66.8
S	8.736	7.687	9.704	6.053	6.241	5.312

Table 4. Weekly count of adult chum salmon, by s

1978						
			Total			
Week	♀ n	♂ n	n	Accum. %	Week	♀ n
Sep						
24-30	3	2	5	7		
Oct					Oct	
1-7	0	0	0	7	S30-6	0
8-14	0	2	2	10	7-13	0
15-21	0	0	0	10	14-20	0
22-28	15	20	35	63	21-27	2
29-N4	8	14	22	96	28-N3	0
Nov					Nov	
5-11	0	3	3	100	4-10	0
12-18	0	0	0		11-17	0
Total	26	41	67			2

NOTE: In 1978 and 1979 some of the fish were dip
upstream.

ex, passing Carnation Creek fence in 1978, 1979, 1980.

1979				1980			
	Total					Total	
♂ n	n	Accum. %	Week	♀ n	♂ n	n	Accum. %
			Oct				
0	0		S28-04	0	0	0	
0	0		5-11	0	0	0	
0	0		12-18	3	15	18	4.2
6	8	89	19-25	99	215	314	77.4
1	1	11	26-N1	24	67	91	98.6
			Nov				
0	0		2-8	1	4	5	99.8
0	0		9-15	0	0	0	
			16-22	0	1	1	100
7	9			127	302	429	

netted from the downstream side of fence and released

Table 5. Length frequency (fork length) of adult chum salmon by sex in Carnation Creek 1978, 1979, 1980.

Fork length (cm)	Males			Females		
	1978	1979	1980	1978	1979	1980
55			1			
56			-			
57			2			
58			2			
59			4			
60			6			4
61			5	1		
62			5		1	5
63			10			9
64		2	16			12
65			23	1		13
66		1	19	1	1	14
67	2	2	13	3	1	13
68	4	2	33	7		13
69	1	1	29	9	2	8
70	6	1	37	8	3	10
71	4		11	25	5	9
72	13	1	18	21		5
73	11		19	7	2	2
74	10		14	15	2	4
75	17	3	18	12	1	3
76	6	2	3	5	2	2
77	17	2	4	6	2	
78	9	1	4	3	2	
79	5	1	2	1		
80	12	2	3			1
81	5		1	1		
82	11	3				
83	3					
84	3					
85	2					
n	141	24	302	126	24	127
$\bar{x}$	76.12	73.71	68.81	72.17	72.04	67.39
S	4.190	5.938	4.658	3.060	4.006	3.795

NOTE: 1978 and 1979 samples are a combination of fish measured at the fence and fish measured when taking otoliths downstream of fence.

1980 sample is from fish measured at fence only.

Table 6. Fork length and age composition (otoliths) of chum salmon in Carnation Creek 1978, 1979, 1980.

Fork length (cm)	Males								
	0.2			0.3			0.4		
	1978	1979	1980	1978	1979	1980	1978	1979	1980
58			2						
59									
60									
61			1						
62						2			
63			2			1			
64		1	3			2			
65						5			
66		1				3			
67		1	2	1		6			
68	1			1		11			
69				1		6			
70				4		8			
71	1		1	1		6			
72	1		1	6	1	7			
73	1			6		5			
74			1	7		3			
75	1			13	3	4			
76				4	2	4			1
77				10	2	4			
78				8	1	2			
79				2	1		1		1
80				10	2	1	1		
81				3					
82				6	2		2		1
83							2		
84				2			1		
85				2					
n	5	3	13	87	14	80	7	0	3
$\bar{x}$	71.8	65.7	65.1	76.4	77.4	70.3	81.9		79.0
S	2.588	1.530	4.991	3.950	2.902	4.075	1.774		3.000
%	5	18	14	88	82	83	7		3

Table 6 (cont'd)

Fork length (cm)	Females								
	0.2			0.3			0.4		
	1978	1979	1980	1978	1979	1980	1978	1979	1980
62						1			
63						2			
64			3			1			
65				1		1			
66	1		1		1	7			
67	1	1	1	2		3			
68	1		1	2		4			
69	5			4	2	9			
70				3	3	2			
71			1	22	5	4			
72			2	17		3			
73				3	2	3			
74				12	2	4	2		
75				11		1			
76				5	2	4			
77				4	1	1	1	1	2
78				2	2	1			1
79				1					
80									
n	8	1	9	89	20	51	3	1	3
$\bar{x}$	68.2	67.0	67.6	72.6	72.4	69.8	75.0	77.0	77.3
S	1.165	-	3.396	2.653	3.299	3.937	1.732		.581
%	8	5	14	89	90	81	3	5	5

Table 7. Summary of adult steelhead and cutthroat trout trapped at the counting fence at Carnation Creek in 1978, 1979, 1980.

Date of sampling	Species	Length (cm)	Sex	Age	Comment
Feb 5, 1978	Cutthroat	37	♀	3.1	Migrating upstream
Mar 8, 1978	Cutthroat	34	♀	3.0	Migrating upstream
Mar 15, 1978	Cutthroat	41	♀	3.1	Migrating upstream
Mar 23, 1978	Cutthroat	34	♀	-	Migrating upstream
Apr 6, 1978	Cutthroat	37	♀	3.1	Migrating downstream
Apr 6, 1978	Cutthroat	35	♀	R.2	Migrating downstream
Nov 8, 1978	Cutthroat	32	♀	3.0	Migrating upstream
Apr 4, 1979	Cutthroat	32	-	3.2	Migrating downstream
May 31, 1979	Cutthroat	33	-	3.2	Migrating downstream
Dec 4, 1979	Cutthroat	31	♀	3.0	Migrating upstream
Dec 6, 1979	Cutthroat	47	♂	2.1	Migrating upstream
May 1, 1980	Cutthroat	32	♀	2.1	Migrating downstream
May 12, 1980	Cutthroat	29	-	3.1	Migrating downstream
May 20, 1980	Cutthroat	30	-	2.1	Migrating downstream
Nov 24, 1980	Cutthroat	33	♂	2.0	Migrating upstream
May 21, 1980	Steelhead	63	-	3.2	Migrating downstream

NOTE: Fence not operated December 20, 1978 - March 21, 1979 and December 21, 1979-March 18, 1980.

Table 8. Summary of downstream counts of juvenile salmonids and cottids at the Carnation Creek counting fence 1978, 1979, 1980.

Species	Age	1978	1979	1980
Chum	Fry	52930	6025	129
Coho	Fry	13972	5285	27654
	I+ (<60 mm)	27	19	21
	I+ (≥60 mm)	3841	2843	3555
	II+	778	668	991
	TOTAL I+ (≥60 mm), II+	4619	3511	4546
Steelhead	<100	7	1	10
	≥100	103	20	51
Cutthroat	<100	7	3	6
	≥100	60	25	60
Cottus asper		427[a]	233[b]	300[c]
Cottus aleuticus		41[a]	42[b]	61[c]
Sampling period		Mar 15-Aug 30	Mar 21-Jul 25	Mar 18-Aug 1

[a]Count ends June 29.

[b]Count ends June 14.

[c]Count ends July 7.

Table 9. Dates when 25, 50 and 75% of the downstream migration of migration of coho, chum and steelhead had occurred in Carnation Creek 1978, 1979, 1980.

Species	Accum. %	1978	1979	1980
Coho smolts	25	April 18	April 18	April 22
	50	May 2	April 30	April 30
	75	May 11	May 6	May 7
Steelhead (≥100 mm)	25	April 22	April 14	May 1
	50	May 10	May 6	May 9
	75	May 14	May 6	May 19
Coho fry	25	April 7	April 16	April 10
	50	April 15	April 23	April 17
	75	April 18	May 5	May 1
Chum fry	25	April 7	April 19	April 3
	50	April 12	April 23	April 5
	75	April 15	April 24	April 5

Table 10. Mean length, range and standard deviation of coho and chum fry at ~ 10 day intervals in the 1978, 1979, 1980, Carnation Creek outmigrations.

Date	Coho fry				Chum fry			
	$\bar{x}$ (mm)	n	S	Range (mm)	$\bar{x}$ (mm)	n	S	Range (mm)
1978								
March 24	39.10	88	.959	37-44	42.14	76	1.937	38-45
April 1	36.81	69	1.102	34-39	40.50	50	.886	39-43
10	35.62	50	1.123	33-39	41.96	50	1.068	40-44
20	36.33	18	.970	34-38	41.91	33	.914	40-44
30	39.01	66	1.246	35-42	42.54	50	.788	41-44
May 11	38.68	71	1.381	37-46				
29	40.35	51	2.985	34-49				
June 10	42.27	69	3.429	34-52				
13	42.31	117	3.302	35-52				
24	46.77	30	2.849	42-53				
Aug. 15	48.51	170	3.427	40-58				
1979								
March 24	36.31	48	.903	33-38	44.38	65	1.155	41-46
April 2	34.98	54	1.339	33-38				
13	37.02	50	1.253	34-39				
15					40.98	51	.761	39-42
21	38.18	50	.720	36-39	41.29	52	.977	39-43
May 2	37.26	50	1.065	36-43				
3					41.35	17	1.169	39-43
18	41.70	40	3.709	38-49				
June 5	46.50	28	4.150	38-56				
July 11	50.67	183	4.472	40-62				
1980								
March 18	38.00	61	1.528	34-40				
27	38.17	46	1.495	35-41				
April 3	37.69	172	1.504	35-43	41.72	57	1.082	38-44
12	37.50	52	1.245	35-40				
23	37.13	62	2.265	33-45				
May 3	36.80	25	.707	35-38				
12	38.59	17	2.320	36-44				
22	37.98	63	1.611	34-46				
June 2	39.12	16	2.964	34-44				
9	38.24	49	2.278	32-45				
12	39.82	56	2.992	34-52				
24	41.16	75	2.455	37-47				
July 2	41.33	138	2.965	35-51				
11	41.94	49	2.221	38-48				

Table 11. Age composition and mean lengths of rainbow and cutthroat trout in the downstream migrations in Carnation Creek 1978, 1979, 1980.

		Rainbow				Cutthroat			
Year	Age	n	$\bar{x}$ (mm)	S	Range (mm)	n	$\bar{x}$ (mm)	S	Range (mm)
1978	I	13	100.2	15.59	72-117	19	105.9	10.50	86-124
	II (all)	43	121.6	13.62	98-151	34	115.9	12.51	98-144
	II (≥100 mm)	42	122.2	13.27	100-151	33	116.4	12.29	100-144
	III	51	152.6	16.04	104-190	14	147.2	13.67	126-172
	IV	3	206.3	10.21	199-218	0			
Total	(≥100 mm)	103	139.0	24.32	100-218	60	122.6	17.95	100-172
1979	I	2	116.5	6.36	112-121	5	108.0	8.86	95-120
	II (all)	5	112.6	13.22	94-128	17	115.8	15.30	91-141
	II (≥100 mm)	4	117.2	9.43	105-128	15	119.5	9.53	102-141
	III	13	146.0	11.97	131-173	6	148.7	14.38	126-171
	IV	1	203.0			0			
Total	(≥100 mm)	20	140.1	5.04	105-203	25	125.2	17.06	102-171
1980	I	16	95.0	13.15	74-124	13	98.9	13.10	80-129
	II (all)	5	146.6	12.44	128-158	34	134.8	18.13	101-180
	II (≥100 mm)	5	146.6	12.44	128-158	34	134.8	18.13	101-180
	III	38	169.0	16.59	140-204	19	166.7	17.22	142-195
	IV	2	229.0	14.14	219-239	0			
Total	(≥100 mm)	51	161.9	28.73	100-239	60	141.7	25.48	100-195

Table 12. Late summer resident population estimates on lower Carnation Creek (3070 m) 1978, 1979, 1980.

	1978				1979				1980			
			95% CI				95% CI				95% CI	
Species	Age	N	Lower	Upper	Age	N	Lower	Upper	Age	N	Lower	Upper
Coho	0	10928	10838	11013	0	13230	13136	13322	0	20953	20810	21093
	I	1089	1067	1117	I	1546	1479	1617	I	2142	2053	2229
	Total	12016			Total	14776			Total	23095		
Rainbow	0	136	126	152	0				0	269	176	367
	I	94	88	101	I				I	16	16	16
	II	68	21	121	II	39	12	59	II	24	24	24
	III	9	9	9	III				III			
	Total	307			Total	39			Total	309		
Cutthroat	0	944	857	1034	0	338	247	426	0	212	201	230
	I	136	107	165	I	86	81	93	I	163	121	199
	II	~85			II	8	8	8	II	57	48	69
	III	34		93	III				III	~24		
	Total	1199			Total	432			Total	456		
Cottus aleuticus	All	3411	3017	3806	All	1845	1289	2395	All	1832	1605	2055
Grand total		16933				17092				25692		

Table 13. Late summer fish density (fish/m^2) by study section and species in lowest 3070 m of Carnation Creek 1978, 1979, 1980.

Species	Age	1978						
		II	III	IV	V	VI	VIII	Combined[a]
Coho	0	.45	.35	.74	.66	.60	.27	.50
	I	.02	.04	.05	.10	.10	.02	.05
	$\leq$	.47	.39	.79	.76	.70	.29	.55
Rainbow	0							.006
	I							.004
	II							.003
	III							.0004
	$\leq$							.014
Cutthroat	0							.043
	I							.006
	II							$\sim$.004
	III							.002
	$\leq$							.055
Salmonids	$\leq$							.619
Cottus asper	$\leq$	.04						.001
Cottus aleuticus	$\leq$	.61	.04	.10	.03	.05	.05	.16
Grand total								.78

Table 13 (cont'd)

Species	Age	1979 II	III	IV	V	VI	VIII	Combined[a]
Coho	0	.72	.60	1.14	.29	.51	.94	.74
	I	.10	.12	.11	.10	.07	.04	.09
	Σ	.82	.72	1.25	.39	.58	.98	.83
Rainbow	0							
	I							
	II							.0002
	III							
	Σ							.0002
Cutthroat	0							.0189
	I							.0005
	II							.0001
	III							
	Σ							.0194
Salmonids	Σ							.850
Cottus asper	Σ	.10						.0181
Cottus aleuticus	Σ	.36	.01	.02	~.06	.03	.07	.10
Grand total								.968

Table 13 (cont'd)

Species	Age	1980						
		II	III	IV	V	VI	VIII	Combined[a]
Coho	0	.70	.98	1.97	1.24	1.15	1.58	1.26
	I	.12	.19	.19	.10	.11	.13	.13
	$\leq$	.82	1.17	2.16	1.34	1.26	1.71	1.39
Rainbow	0							.016
	I							.001
	II							.001
	III							
	$\leq$							.018
Cutthroat	0							.013
	I							.010
	II							.003
	III							$\sim$.001
	$\leq$							.027
Salmonids	$\leq$							1.435
Cottus asper	$\leq$	.05						.011
Cottus aleuticus	$\leq$	.22	.05	.06	.10	.08	.15	.11
Grand total								1.556

[a]Not a mean but derived from areas and catches in all sections combined for population estimate.

Table 14. Late summer fish density (fish/m^2)

Species	Age	Lower Carnation	Upper Carnation
Coho	0	.50	
	I	.05	
	Σ	.55	
Rainbow	0	.0063	
	I	.0043	
	II	.0031	
	III	.0004	
	Σ	.0141	
Cutthroat	0	.0435	.06
	I	.0063	.06
	II	~.0039	.02
	III	.0016	0
	Σ	.0553	.14
Salmonids	Σ	.619	.14
Cottus asper	Σ	~.001	
Cottus aleuticus	Σ	.16	
Grand total		.78	.14

by species for all streams 1978, 1979, 1980.

Trib "1600"	Trib "C"	Useless	Frederick	Ritherdon	South Pachina
1978					
		.13			.37
		0			.02
		.13			.39
					.14
					.01
					0
					0
					.15
	.20	.03		.06	
	.32	.06		.05	
	.04	.02		~.01	
	0	0		.003	
	.56	.11		.12	
	.56	.24		.12	.54
					.25
		.73			.36
	.56	.97		.12	1.15

Table 14 (cont'd)

Species	Age	Lower Carnation	Upper Carnation	Trib "1600"	Trib "C"	Useless	Frederick	Ritherdon	South Pachina
				1979					
Coho	0	.74				.38	.39		1.26
	I	.09				0	0		.05
	Σ	.83				.38	.39		1.31
Rainbow	0						.06		.27
	I								.02
	II	.0002							
	III								
	Σ	.0002					.06		.29
Cutthroat	0	.0189	.29		~.05	.12		.11	
	I	.0005	.16		.12	.02		~.03	
	II	.0001	.03		.05	.01		.04	
	III		.0005					.01	
	Σ	.0194	.4805		.22	.15		.19	
Salmonids	Σ	.850	.48		.22	.53	.45	.19	1.60
Cottus asper	Σ	.0181					.11		.22
Cottus aleuticus	Σ	.10				.79	2.50		~.22
Grand total		.968	.4805		.22	1.32	3.06	.19	2.04

Table 14 (cont'd)

Species	Age	Lower Carnation	Upper Carnation	Trib "1600"	Trib "C"	Useless	Frederick	Ritherdon	South Pachina
				1980					
Coho	0	1.26				.35			.98
	I	.13							.05
	Σ	1.39				.35			1.03
Rainbow	0	.016							.20
	I	.001							.03
	II	.001							~.001
	III								~.001
	Σ	.018							.232
Cutthroat	0	.013	.13		.25	.08		~.139	
	I	.010	.11		.05	.07		.035	
	II	.003	.04		.04	.01		.003	
	III	~.001						.003	
	Σ	.027	.28		.34	.16		.18	
Salmonids	Σ	1.435	.28		.34	.51			1.262
Cottus asper	Σ	.011				.03			.26
Cottus aleuticus	Σ	.11				~.24			.16
Grand total		1.556	.28		.34	.78		.18	1.682

Table 15. Late summer biomass per unit area (g/m^2) by species for all streams studied 1978, 1979, 1980.

Species	Age	Lower Carnation	Upper Carnation	Trib "1600"	Trib "C"	Useless	Frederick	Ritherdon	South Pachena
					1978				
Coho	0	1.03				.32			.86
	I	.30				0			.17
	Σ	1.33				.32			1.03
Rainbow	0	.02							.19
	I	.05							.07
	II	.07							0
	III	.02							0
	Σ	.16							.26
Cutthroat	0	.07	.06		.31	.02		.11	
	I	.05	.42		2.14	.38		.42	
	II	~.09	.26		1.19	.39		~.29	
	III	.07	0		0	0		.17	
	Σ	.28	.74		3.64	.79		.99	
Salmonids	Σ	1.77	.74		3.64	1.11		.99	1.29
Cottus asper	Σ	~.04				0			2.60
Cottus aleuticus	Σ	.59				2.94			1.20
Grand total		2.40	.74		3.64	4.05		.99	5.09

Table 15 (cont'd)

Species	Age	Lower Carnation	Upper Carnation	Trib "1600"	Trib "C"	Useless	Frederick	Ritherdon	South Pachena
				1979					
Coho	0	1.60				.89	1.23		1.59
	I	.50							.44
	Σ	2.10				.89	1.23		2.03
Rainbow	0						.08		.31
	I								~.15
	II	.04							
	III								
	Σ	.04					.08		.46
Cutthroat	0	.03	.31		~.13	.11		.16	
	I	.04	1.10		1.05	.12		~.35	
	II	.01	.59		1.01	.05		.81	
	III		.16					.62	
	Σ	.08	2.16		2.19	.28		1.94	
Salmonids	Σ	2.22	2.16		2.19	1.17	1.31	1.94	2.49
Cottus asper	Σ	~.15					.64		1.92
Cottus aleuticus	Σ	.49				2.75	.70		~.71
Grand total		2.86	2.16		2.19	3.92	2.65	1.94	5.12

Table 15 (cont'd)

Species	Age	Lower Carnation	Upper Carnation	Trib "1600"	Trib "C"	Useless	Frederick	Ritherdon	South Pachena
				1980					
Coho	0	1.90				.71			1.69
	I	.69							.39
	Σ	2.59				.71			2.08
Rainbow	0	.05							.22
	I	.01							.42
	II	.06							~ .17
	III								~ .31
	Σ	.12							1.12
Cutthroat	0	.02	.13		.65	.05		~ .24	
	I	.09	.76		.65	.46		.42	
	II	.10	.83		.67	.16		.16	
	III	~ .08						.26	
	Σ	.29	1.72		1.97	.67		1.08	
Salmonids	Σ	3.00	1.72		1.97	1.38		1.08	3.20
Cottus asper	Σ	.10				.15			1.82
Cottus aleuticus	Σ	.60				.78			.55
Grand total		3.70	1.72		1.97	2.31		1.08	5.57

Table 16. Late summer mean lengths (mm) for salmonids in all streams studied 1978, 1979, 1980.

Species	Age	Lower Carnation	Upper Carnation	Trib "1600"	Trib "C"	Useless	Fredericks	Ritherdon	South Pachena
					1978				
Coho	0	57.1		56.6		60.9	64.2		59.9
	I	80.9		82.3(3)					95.6
Rainbow	0	63.7							52.6
	I	106.6							107.0(2)
	II	129.5							
	III	169.0(1)							
Cutthroat	0	55.0	44.7		53.8	44.2(5)		56.0	
	I	91.6	88.8		86.6	88.8		98.8	
	II	134.0	117.7(4)		136.5(4)	128.3(3)		129.0(3)	
	III	185.7(3)						171.0(1)	
					1979				
Coho	0	58.0		63.7		58.7	64.1		48.5
	I	79.9		81.2					88.8
Rainbow	0						52.2		48.3
	I								90.4
	II	124.7(4)							
	III								
Cutthroat	0	53.3	48.8		59.3(3)	45.0		52.9	
	I	96.5	88.0		92.2	86.7(3)		107.0(4)	
	II	140.0(1)	131.0		122.0(4)	102.0(1)		126.8(6)	
	III		157.0(1)					185.0(2)	

Table 16 (cont'd)

Species	Age	Lower Carnation	Upper Carnation	Trib "1600"
Coho	0	51.7		51.6
	I	76.7		77.0
Rainbow	0	68.0		
	I	98.0(2)		
	II	156.0(3)		
	III			
Cutthroat	0	52.3	46.0	
	I	99.7	88.1	
	II	139.9	126.8	
	III	171.5(2)		

NOTE: If sample size is small number of fish

Trib "C"	Useless	Fredericks	Ritherdon	South Pachena
1980				
	55.9			52.9
				86.8
				46.3
				107.5
				144.0(1)
				IV 221.0(1)
62.4	41.0		54.5	
105.0(4)	85.6		106.8	
121.0	118.0(2)		168.0(1)	
			200.0(1)	

is in brackets.

Table 17. A summary of late summer fish density (fish/m^2) by year, location, species, and age.

Location	Species	Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Lower Carnation	Coho	0	1.15	.88	.80	.73	.92	.75	.69	.53	.50	.74	1.26
		I	.06	.10	.06	.10	.08	.09	.07	.06	.05	.09	.13
	R.B.T.	0	.14	.26	.14	.41	.26	.19	.16	.02	.006		.016
		I	.06	.04	.03	.02	.03	.02	.02	.01	.004		.001
		II	.03	.01	.005	.01	.01	.005	.004	.01	.003	.0002	.001
		III		.01			.001				.0004		
	C. aleuticus			1.43	.20	.36	.30	.16	.09	.08	.16	.10	.11
Upper Carnation	C.T.	0		.01	.01	.23	.13	.07	.19	.16	.06	.29	.13
		I			.15	.10	.13	.07	.12	.11	.06	.16	.11
		II		.16	.08	.13	.06	.09	.05	.02	.02	.03	.04
		III		.002		.05	.01	.01	.01	.01		.0005	
Tributary "C"	C.T.	0			.07	.48	.69	.41	.33	.15	.20	~.05	.25
		I			.56	.29	.24	.30	.21	.29	.32	.12	.05
		II			.08	.26	.02	.07	.05	.03	.04	.05	.04
		III				.02	.02			.02			
Useless Creek	Coho	0			.52	~.03	.14	.32	.28	.18	.13	.38	.35
		I			.11	.02		.01					
	C.T.	0			.02	.18	.05	.09		.02	.03	.12	.08
		I			.10	.08	.18	.10	.02	.07	.06	.02	.07
		II			.02	.02	.01	.06	.02	.02	.02	.01	.01
		III					.01	.01	.01	.01			
	C. aleuticus				.62	.32	.43	.62	.39	.36	.73	.79	~.24
Fredericks Creek	Coho	0		.48	.55		.21	.42	.37	.32		.39	
		I			.03			.01	.01				
	R.B.T.	0			.05		.01	.04	.01	.05		.06	
		I			.01		.002						
		II								.01			
	C. asper			1.19	.23		.48	.34	.17	{.51}		.11	
	C. aleuticus						.47	.38	.27	{ }		2.50	

Table 17 (cont'd)

Location	Species	Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
South Pachena	Coho	0		.70	.33	.29	.21	.68	.43	.40	.37	1.26	.98
		I			.05	.06	.05	.08	.05	.05	.02	.05	.05
	RBT	0		.38	.10	.27	.04	.20	.14	.21	.14	.27	.20
		I		.04	.05	.01	.01		.01	.01	.01	.02	.03
		II		.01	.02								.002
	C. asper			1.78	.40	.12	.21	.34	.24	.20	.25	.22	.26
	C. aleuticus			.03	.08	.08	.24	.08	.33	.33	.36	~.22	.16
Ritherdon Creek	C.T.	0		1.34	.22	.83	.53	.57	.21	.16	.06	.11	~.14
		I		.15	.33	.13	.17	.12	.09	.04	.05	~.03	.03
		II		.05	.06	.01	.02	.04	.04	.04	~.01	.04	.003
		III		.04			.01		.01	.01	.003	.01	.003

Table 18. A summary of late summer salmonid biomass (gm/m^2) by year, location, species, and age.

Location	Species	Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Lower Carnation	Coho	0	2.28	1.25	1.06	1.01	1.21	1.23	.91	1.26	1.03	1.60	1.90
		I	.44	.64	.41	.45	.38	.41	.32	.36	.30	.50	.69
	R.B.T.	0	.20	.19	.08	.32	.21	.20	.15	.04	.02		.05
		I	.39	.26	.20	.11	.16	.16	.11	.11	.05		.01
		II	.62	.14	.15	.12	.10	.08	.04	.17	.07	.04	.06
		III		.33		.04	.02				.02		
Upper Carnation	C.T.	0		.44	.01	.06	.07	.03	.10	.12	.06	.31	.13
		I		.53	1.10	.72	.55	.30	.69	.66	.42	1.10	.76
		II		2.43	1.79	1.79	.90	1.06	.85	.23	.26	.59	.83
		III		.06		1.40	.42	.27	.30	.07		.16	
Tributary "C"	C.T.	0			.05	.33	.65	.39	.30	.14	.31	~.13	.65
		I			3.25	1.72	1.43	2.18	1.31	1.55	2.14	1.05	.65
		II			1.49	3.29	.42	1.14	1.16	.41	1.19	1.01	.67
		III				.30	.95			.37			
Useless Creek	Coho	0			.76	.08	.28	.66	.38	.53	.32	.89	.66
		I			.08	.11		.04					
	C.T.	0			.01	.23	.04	.05		.01	.02	.11	.05
		I			1.04	.70	1.20	.60	.08	.38	.38	.12	.46
		II			.59	.73	.38	.96	.22	.27	.39	.05	.16
		III					.77	.40	.37	.19			
Fredericks Creek	Coho	0		1.06	1.30		.44	1.31	.60	.95		1.23	
		I			.24			.05	.06				
	R.B.T.	0			.05		.01	.07	.02	.07		.08	
		I			.18		.03						
		II								.02			
South Pachena	Coho	0		1.87	.70	.40	.30	1.28	.56	1.06	.86	1.59	1.69
		I			.61	.34	.29	.57	.26	.34	.17	.44	.39

Table 18 (cont'd)

Location	Species	Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
South Pachena	R.B.T.	0		.57	.11	.26	.03	.23	.13	.29	.19	.31	.22
		I		.44	.40	.16	.15		.04	.08	.07	~.15	.42
		II		.23	.60								~.48(II,III)
Ritherdon Creek	C.T.	0		2.92	.31	1.45	.80	1.02	.22	.25	.11	.16	~.24
		I		1.46	2.58	1.28	1.35	.99	.46	.36	.42	~.35	.42
		II		.70	1.61	.34	.59	.83	.50	.61	~.29	.81	.16
		III		1.28			.57		.22	.16	.17	.62	.26

Table 19. A summary of late summer mean fork lengths (mm) for all salmonid species for all streams by year.

Location	Species	Age	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Lower Carnation	Coho	0	52.4	48.1	46.1	50.6	49.5	54.3	49.5	59.9	57.1	58.0	51.7
		I	78.5	77.4	77.5	75.7	78.5	76.1	75.1	80.1	80.9	79.9	76.7
	R.B.T.	0	51.3	40.5	40.8	44.7	44.5	47.9	46.6	59.9	63.7		68.0
		I	80.4	79.8	75.9	83.8	83.0	83.5	84.3	94.9	106.6		98.0[a]
		II	115.4	107.2	133.8	111.7	128.0	111.4	117.8	108.4	129.5	124.7[a]	156.0[a]
		III		141.6		168.0[a]	141.0[a]				169.0[a]		
Upper Carnation	C.T.	0		32.6	30.0[a]	31.8	38.7	38.4	38.6	43.5	44.7	48.8	46.0
		I		77.5	81.8	91.1	75.7	74.7	84.0	85.0	88.8	88.0	88.1
		II			118.3	114.5	113.8	109.9	116.2	111.7	117.7[a]	131.0	126.8
		III		151.0		143.4	143.5[a]	158.5[a]	164.0[a]	128.0[a]		157.0[a]	
Tributary "C"	C.T.	0			38.4	43.0	47.2	45.9	44.7	46.2	53.8	59.3[a]	62.4
		I			75.3	83.3	83.9	90.9	86.0	82.5	86.6	92.2	105.0[a]
		II			111.3	108.9	117.5[a]	115.5	123.6	114.0[a]	136.5[a]	122.0[a]	121.0
		III				159.0[a]	156.5[a]			132.0[a]			
Tributary "1600"	Coho	0			50.8	47.6	49.2	52.0	49.0		56.6	63.7	51.6
		I			80.0	75.9	76.4	79.3	72.3		82.3[a]	81.2	77.0
Useless Creek	Coho	0			48.7	66.2[a]	57.5	58.7	50.9	63.7	60.9	58.7	55.9
		I			78.5	79.7[a]		84.0[a]					
	C.T.	0			28.3[a]	49.3	42.4	39.3		41.7[a]	44.2	45.0	41.0
		I			92.8	99.5	85.3	84.8	77.0[a]	79.9	88.8	86.7[a]	85.6
		II			126.7[a]	163.3[a]	131.7[a]	119.4	101.0[a]	116.0[a]	128.3[a]	102.0[a]	118.0[a]
		III			181.0[a]		161.7[a]	174.0[a]	157.5[a]	161.0[a]			
Fredericks Creek	Coho	0		53.4	53.6	55.6	56.9	65.9	52.8	64.6	64.2	64.1	
		I			81.8	74.6		84.3[a]	79.0[a]				
	R.B.T.	0			42.3			54.7	52.8	52.3		52.2	
		I			109.0[a]								
		II								99.0[a]			

Table 19 (cont'd)

Location	Species	Age	1970	1971	1972
South Pachena	Coho	0		55.6	51.9
		I			90.4
	R.B.T.	0		48.8	44.4
		I		94.1	82.6
		II		132.3	134.7
Ritherdon Creek	C.T.	0		56.5	48.5
		I		90.7	84.5
		II		106.1	124.8
		III		131.1[a]	

[a]Four or less fish in sample.

1973	1974	1975	1976	1977	1978	1979	1980
50.6	51.0	56.6	50.2	62.1	59.9	48.5	52.9
79.9	77.1	88.3	78.1	83.5	95.6	88.8	86.8
47.9	43.7	49.5	46.2	52.8	52.6	48.3	46.3
103.5[a]	96.7		80.5[a]	90.0[a]	107.0[a]	90.4	107.5
							144.0[a]
57.0	52.6	56.7	47.8	54.9	56.0	52.9	54.5
101.8	92.7	95.4	81.6	96.2	98.8	107.0[a]	106.8
153.5[a]	133.7	133.1	111.7	121.5	129.0[a]	126.8	168.0[a]
	171.0[a]		139.0[a]	152.0[a]	171.0[a]	185.0[a]	200.0[a]

Table 20. Summary of length-weight and condition factor (K) data by date, location, species and age (all length-weight measures were made on live fish).

Date	Location	Section	Species	n	Age	K	a ($\times 10^{-5}$)	b
Dec 1/77	Carnation	II	Coho	10	0	1.276	16.090	2.414
Feb 2/78	Carnation	II	Coho	9	1,2	1.162	11.827	2.466
Mar 13/78	Carnation	II	Coho	10	1	1.192	.278	3.341
Apr 1/78	Carnation	Fence	Coho	12	1	.967	.051	3.693
Apr 2/78	Carnation	Fence	Coho	7	1	1.056	.224	3.359
				5	2	1.067	.009	4.404
Apr 11/78	Carnation	Fence	Coho	8	1	1.048	.044	3.739
				5	2	1.016	660.072	1.593
Apr 13/78	Carnation	Fence	Coho	22	1	1.013	1.582	2.897
				4	2	.921	.017	3.884
Apr 22/78	Carnation	Fence	Coho	15	1	1.001	.999	3.000
				9	2	1.001	1.280	2.948
May 12/78	Carnation	Fence	Coho	16	1	.997	3.821	2.696
				5	2	.966	.138	3.418
May 20/78	Carnation	Fence	Coho	6	1	.941	3.429	2.707
				4	2	.945	44.667	2.160
Dec 20/78	Carnation	II	Coho	12	0,1	1.157	.038	3.824
Jun 8/78	Carnation	II	Coho	22	0	1.068	.111	3.582
				3	1	1.164	3.904	2.723
Jun 7/78	Carnation	VI	Coho	15	0	1.034	.836	3.057
				8	1	1.153	12.447	2.444
Jul 25/78	Carnation	II	Coho	11	0	1.065	.379	3.250
				3	1	1.143	1.233	2.983
Jul 27/78	Carnation	VI	Coho	12	0	1.048	.359	3.277
				6	1	1.036	.639	3.112
Oct 5/78	Carnation	II	Coho	13	0	1.069	.990	3.020
				4	1	1.094	1.191	2.981
Sep 26/78	Carnation	VI	Coho	14	0	1.022	.605	3.130
				9	1	1.123	.786	3.082
Jun 8/78	Carnation	II+VI	Rainbow	3	2	1.031	.057	3.608
Jun 8/78	Carnation	VI	Rainbow	7	1	1.023	1.147	2.974
Jul 25/78	Carnation	II+VI	Rainbow	6	0	.996	.032	3.881
				3	2	.961	.566	3.109
Jul 27/78	Carnation	VI	Rainbow	9	1	.939	.566	3.114
Sep 26/78	Carnation	VI	Rainbow	2	0	.915	-	-
				1	2	.972	-	-

Table 20 (cont'd)

Date	Location	Section	Species	n	Age	K	a ($\times 10^{-5}$)	b
Oct 5/78	Carnation	II+VI	Rainbow	6	1	.950	2.244	2.815
Jun 8/78	Carnation	II	Cutthroat	3	2,3	.997	8.801	2.542
Jul 25/78	Carnation	II	Cutthroat	4	2,3	.956	.887	3.013
Jul 25/78	Carnation	II+VI	Cutthroat	6	1	.978	.0035	4.265
Jul 27/78	Carnation	VI	Cutthroat	3	0	.977	1.049	2.982
Sep 26/78	Carnation	VI	Cutthroat	7	0	.966	.423	3.201
				7	1	.941	.621	3.093
				3	2	.984	130.068	2.004
Oct 5/78	Carnation	II	Cutthroat	2	2	.977	37.250	2.255
Jun 6/78	Carnation	IX	Cutthroat	17	1	1.331	4.118	2.728
				19	2	1.309	3.971	2.759
Sep 19/78	Carnation	IX	Cutthroat	14	0	.964	.382	3.243
				12	1	.965	.177	3.376
				4	2	.976	34.162	2.254
Jun 6/78	Carnation	Trib "C"	Cutthroat	31	1	1.331	2.379	2.858
				16	2	1.364	1.566	2.969
Oct 6/78	Carnation	Trib "C"	Cutthroat	6	0	.941	1.832	2.835
				20	1	.958	.228	3.319
				4	2	1.051	.023	3.777
Jun 8/78	Carnation	II	Aleuticus	12	ALL	1.060	.496	3.182
Jun 7/78	Carnation	VI	Aleuticus	5	ALL	1.133	.415	3.219
Jul 27/78	Carnation	VI	Aleuticus	6	ALL	1.101	.181	3.406
Jul 25/78	Carnation	II	Aleuticus	11	ALL	1.021	.478	3.185
Oct 5/78	Carnation	II	Aleuticus	13	ALL	1.004	.171	3.421
Sep 26/78	Carnation	VI	Aleuticus	14	ALL	1.147	.428	3.219
Jun 8/78	Carnation	II	Asper	8	ALL	.993	.583	3.120
Jul 25/78	Carnation	II	Asper	7	ALL	1.120	.029	3.807
Oct 5/78	Carnation	II	Asper	4	ALL	1.034	.330	3.255
Oct 6/78	Frederick	-	Coho	18	0	1.064	.402	3.228
			Rainbow	3	0	1.043	1.309	2.946
			Aleuticus	11	ALL	.906	.378	3.215
			Asper	1	ALL	.932	-	-
Sep 19/78	Pachena	-	Coho	22	0	1.031	.675	3.102
			Coho	3	1	1.045	.417	3.199
			Rainbow	13	0	.953	.780	3.050
			Rainbow	2	1	1.074	.00001	5.420
			Cutthroat	1	2	.924	-	-
			Aleuticus	23	ALL	1.017	.521	3.162
			Asper	21	ALL	1.120	.137	3.461

Table 20 (cont'd)

Date	Location	Section	Species	n	Age	K	a ($\times 10^{-5}$)	b
Aug 30/78	Useless	-	Coho	13	0	1.069	1.684	2.891
			Cutthroat	4	0	.891	.248	3.340
			Cutthroat	7	1	.909	3.336	2.713
			Cutthroat	3	2	.927	4.218	2.687
			Aleuticus	21	ALL	1.009	.113	3.506
			Asper	1	ALL	1.306	-	-
Aug 30/78	Ritherdon	-	Cutthroat	9	0	1.000	5.931	2.566
				14	1,2,3	.966	.420	3.173
1979								
Mar 29/79	Carnation	Fence	Coho	11	1	.959	2.518	2.773
				1	2	.910		
Apr 4/79	Carnation	Fence	Coho	11	1	.955	11.389	2.431
				1	2	.902		
Apr 17/79	Carnation	Fence	Coho	22	1	1.010	2.230	2.816
				1	2	.984		
Apr 23/79	Carnation	Fence	Coho	6	1	.984	5.202	2.619
				5	2	1.036	.062	3.610
May 4/79	Carnation	Fence	Coho	7	1	1.033	1.221	2.964
				4	2	1.001	227.676	1.832
May 16/79	Carnation	Fence	Coho	12	1	.963	1.511	2.898
				8	2	.958	44.289	2.172
May 26/79	Carnation	Fence	Coho	10	1	.941	1.106	2.963
Apr 24/79	Carnation	400 m	Coho	11	0	.881	.018	4.057
				6	1	1.087	1.931	2.865
				2	2	1.035		
Jun 9/79	Carnation	400 m	Coho	16	0	1.052	.204	3.413
				4	1	1.145	16.088	2.389
Jul 26/79	Carnation	400 m	Coho	14	0	1.088	.392	3.252
				5	1	1.089	.534	3.162
Sep 25/79	Carnation	400 m	Coho	11	0	1.068	1.784	2.877
				2	1	1.075	-	-
Jun 4/79	Carnation	II	Coho	14	0	.996	.507	3.181
				7	1	1.152	.063	3.673
Jun 12/79	Carnation	VI	Coho	14	0	1.047	.220	3.403
				9	1	1.167	5.245	2.650
Jul 24/79	Carnation	II	Coho	13	0	1.054	.778	3.078
				5	1	1.037	1.086	2.990
Jul 26/79	Carnation	VI	Coho	10	0	1.099	.660	3.129
				4	1	1.093	47.409	2.129

Table 20 (cont'd)

Date	Location	Section	Species	n	Age	K	a ($\times 10^{-5}$)	b
Sep 20/79	Carnation	II	Coho	13	0	1.078	1.137	2.988
				7	1	1.112	2.212	2.845
Sep 18/79	Carnation	VI	Coho	11	0	1.051	1.080	2.994
				4	1	1.082	.724	3.093
Jun 12/79	Carnation	VI,VIII	Rainbow	9	1	1.032	1.936	2.858
		II,VI		5	2	.975	.004	4.155
Jul 24/79	Carnation	II,VI	Rainbow	2	1	1.003	1.732	2.884
Sep 18/79	Carnation	VI	Rainbow	1	2	1.007	-	-
Jun 4/79	Carnation	II,VI,VIII	Cutthroat	5	1,2	.995	1.306	2.943
Jul 25/79	Carnation	II,VI	Cutthroat	2	1,2	1.086	-	-
Jun 4/79	Carnation	IX	Cutthroat	8	1	1.016	2.137	2.821
				11	2	.945	.532	3.126
				4	3	.917	1145.060	1.534
Oct 10/79	Carnation	IX	Cutthroat	10	0	.904	.525	3.140
				11	1	.938	.829	3.028
				6	2	.887	5.211	2.636
				1	3	.995	-	-
Jun 11/79	Carnation	Trib "C"	Cutthroat	11	1	1.086	3.742	2.714
				5	2	1.057	.419	3.199
Sep 17/79	Carnation	Trib "C"	Cutthroat	3	0	1.048	2.486	2.789
				8	1	1.063	2.557	2.806
				4	2	1.069	6.662	2.619
Apr 24/79	Carnation	400 m	Aleuticus	6	-	.974	5.263	2.604
Apr 24/79	Carnation	400 m	Asper	2	-	.982	-	-
Jun 9/79	Carnation	400 m	Aleuticus	6	-	.961	.063	3.646
Jun 9/79	Carnation	400 m	Asper	6	-	1.008	.015	3.952
Jul 26/79	Carnation	400 m	Aleuticus	8	-	1.043	.978	3.019
Jul 26/79	Carnation	400 m	Asper	4	-	.981	.035	3.757
Sep 25/79	Carnation	400 m	Aleuticus	8	-	1.043	.143	3.470
Sep 25/79	Carnation	400 m	Asper	3	-	.984	1.132	2.970
Jun 4/79	Carnation	II	Aleuticus	11	-	1.068	.386	3.244
Jun 12/79	Carnation	VI	Aleuticus	7	-	1.065	.347	3.266
Jun 12/79	Carnation	VIII	Aleuticus	5	-	1.211	.347	3.266
Jul 24/79	Carnation	II	Aleuticus	13	-	.979	.185	3.392
Jul 26/79	Carnation	VI	Aleuticus	5	-	1.153	4.151	2.709
Sep 20/79	Carnation	II	Aleuticus	13	-	1.000	.139	3.455
Sep 18/79	Carnation	VI	Aleuticus	8	-	1.065	1.408	2.936

Table 20 (cont'd)

Date	Location	Section	Species	n	Age	K	a ($\times 10^{-5}$)	b
Jun 4/79	Carnation	II	Asper	5	-	1.057	.009	4.070
Jul 24/79	Carnation	II	Asper	7	-	1.044	.444	3.193
Sep 20/79	Carnation	II	Asper	6	-	1.034	.057	3.637
Aug 14/79	Frederick	-	Coho	12	0	1.141	.978	3.037
			Rainbow	6	0	.921	1.265	2.919
			Aleuticus	7	-	.943	.312	3.310
			Asper	13	-	1.103	.442	3.211
Aug 15/79	Pachena	-	Coho	17	0	1.064	.623	3.133
			Coho	8	1	1.133	.459	3.201
			Rainbow	10	0	.995	.994	3.000
			Rainbow	3	1	1.060	<.001	6.513
			Cutthroat	1	3	.986	-	-
			Aleuticus	11	-	1.040	.416	3.219
			Asper	14	-	1.128	.052	3.664
Aug 16/79	Useless	-	Coho	15	0	1.091	.933	3.041
			Cutthroat	7	0	.938	.352	3.263
			Cutthroat	3	1	1.047	43.473	2.175
			Aleuticus	15	-	.982	.789	3.061
			Asper	2	-	.951	.421	3.181
Aug 13/79	Ritherdon	-	Cutthroat	8	0	.945	.464	3.180
				4	1	.940	13.481	2.430
				6	2	.959	4.743	2.671
				2	3	.939	.886	3.011
1980								
Apr 3/80	Carnation	Fence	Chum	28	0	.637	185.208	1.481
Apr 3/80	Carnation	Fence	Coho	36	0	.749	296.871	1.359
Apr 22/80	Carnation	Fence	Coho	12	0	.889	.075	3.679
Mar 29/80	Carnation	Fence	Coho	17	1	1.003	1.439	2.916
Mar 29/80	Carnation	Fence	Coho	5	2	1.022	1.730	2.884
Apr 4/80	Carnation	Fence	Coho	18	1	.995	.627	3.107
Apr 4/80	Carnation	Fence	Coho	4	2	1.001	1.651	2.889
Apr 14/80	Carnation	Fence	Coho	16	1	1.034	1.671	2.892
				4	2	1.037	3.554	2.732
May 9/80	Carnation	Fence	Coho	16	1	.971	.913	3.014
				10	2	.964	60.308	2.116
May 15/80	Carnation	Fence	Coho	18	1	.973	1.391	2.920
Jul 22/80	Carnation	II	Coho	10	0	1.104	1.079	3.006
				6	1	1.102	.102	3.542

Table 20 (cont'd)

Date	Location	Section	Species	n	Age	K	a ($\times 10^{-5}$)	b
Jul 23/80	Carnation	VI	Coho	15	0	1.024	2.410	2.787
				9	1	1.103	97.315	1.974
Sep 16/80	Carnation	II	Coho	17	0	1.066	1.006	3.014
				9	1	1.153	.286	3.323
Sep 18/80	Carnation	VI	Coho	28	0	1.042	.561	3.157
				7	1	1.128	1.151	2.995
Jul 23/80	Carnation	VI	Rainbow	3	0	.955	.001	5.065
		VI,VIII	Rainbow	3	1,2,3	1.060	.998	3.006
Sep 18/80	Carnation	VI	Rainbow	9	0	1.023	.788	3.062
		II,VIII	Rainbow	5	1,2	.981	3.303	2.755
Jul 23/80	Carnation	II,VI,VIII	Cutthroat	8	1	.941	.005	4.180
		VI	Cutthroat	4	0	.907	.001	4.983
Sep 18/80	Carnation	VI	Cutthroat	9	0	.904	1.002	2.976
		VI,VIII	Cutthroat	5	1	.889	8.259	2.521
		II,VI,VIII	Cutthroat	5	2,3	1.006	.258	3.272
Sep 24/80	Carnation	IX	Cutthroat	18	0	.922	.301	3.291
				14	1	.991	.561	3.127
				6	2	.974	1.130	2.969
Sep 15/80	Carnation	Trib "C"	Cutthroat	10	0	1.036	1.640	2.889
				4	1	1.071	324.072	1.772
				3	2	1.047	.006	4.071
Jul 22/80	Carnation	II	Aleuticus	10	-	.959	.852	3.030
Jul 23/80	Carnation	VI	Aleuticus	15	-	1.123	.220	3.377
Jul 23/80	Carnation	VIII	Aleuticus	10	-	1.095	8.129	2.559
Sep 16/80	Carnation	II	Aleuticus	12	-	1.046	1.327	2.949
Sep 18/80	Carnation	VI	Aleuticus	12	-	1.240	.350	3.286
Jul 22/80	Carnation	II	Asper	10	-	1.043	.151	3.433
Sep 16/80	Carnation	II	Asper	9	-	1.082	1.291	2.964
Aug 20/80	Pachena	-	Coho	18	0	1.097	1.240	2.969
			Coho	10	1	1.114	1.760	2.898
			Rainbow	10	0	1.045	7.504	2.489
			Rainbow	5	1	1.004	1.050	2.991
			Aleuticus	17	-	1.033	1.318	2.950
			Asper	30	-	1.090	.037	3.728
Aug 19/80	Useless	-	Coho	14	0	1.107	.906	3.048
			Cutthroat	4	0	.942	.595	3.120
			Cutthroat	10	1	.999	1.632	2.889
			Cutthroat	2	2	1.012	-	-
			Aleuticus	9	-	1.057	.450	3.207
			Asper	6	-	1.139	.066	3.659

Table 20 (cont'd)

Date	Location	Section	Species	n	Age	K	a ($\times 10^{-5}$)	b
Aug 21/80	Ritherdon	-	Cutthroat	27	0	.987	.630	3.112
			Cutthroat	8	1	.985	2.926	2.768
			Cutthroat	2	2,3	.968	3.925	2.731

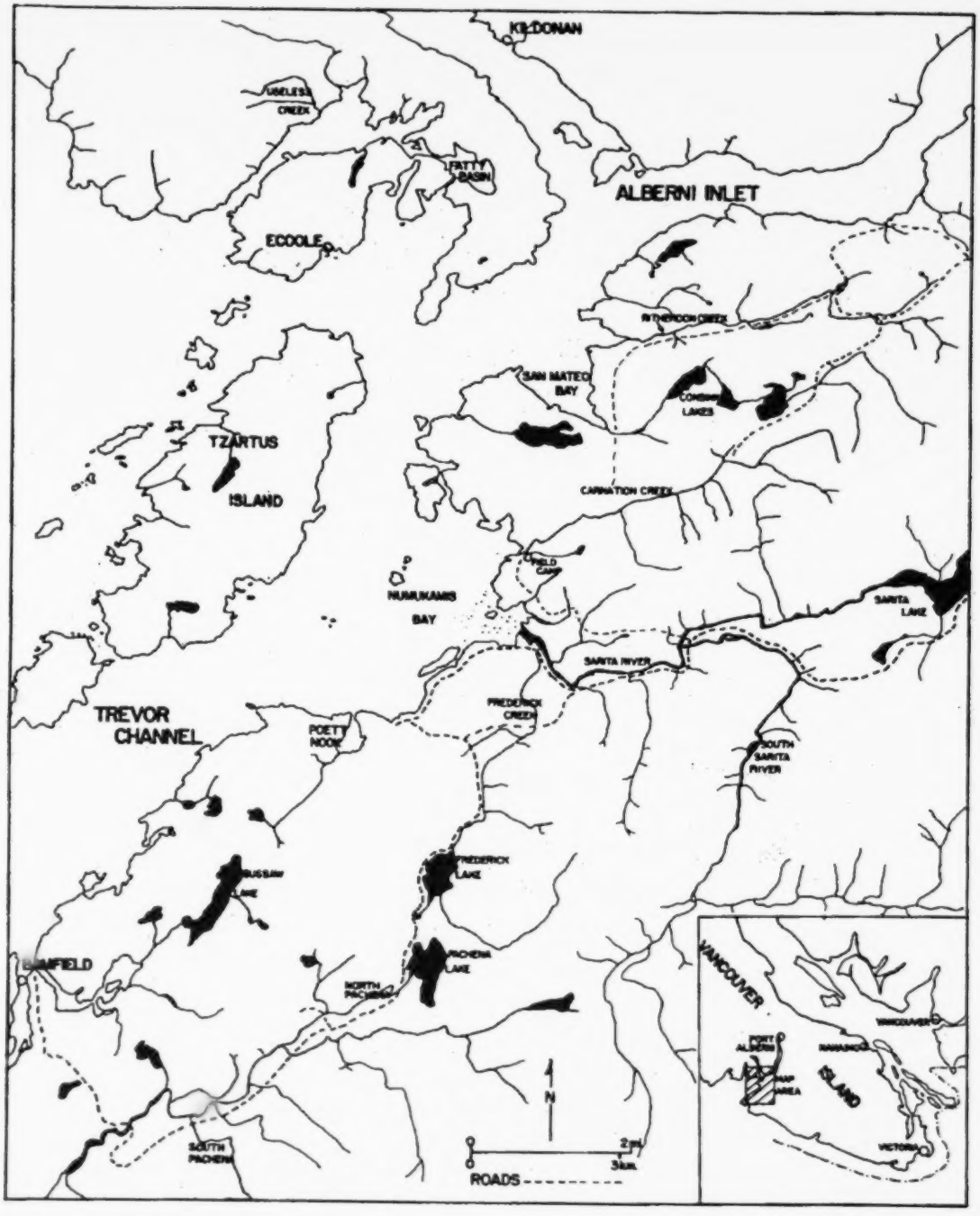

Fig. 1. Map showing the location of study streams in the Barkley Sound area. Only main roads are shown.

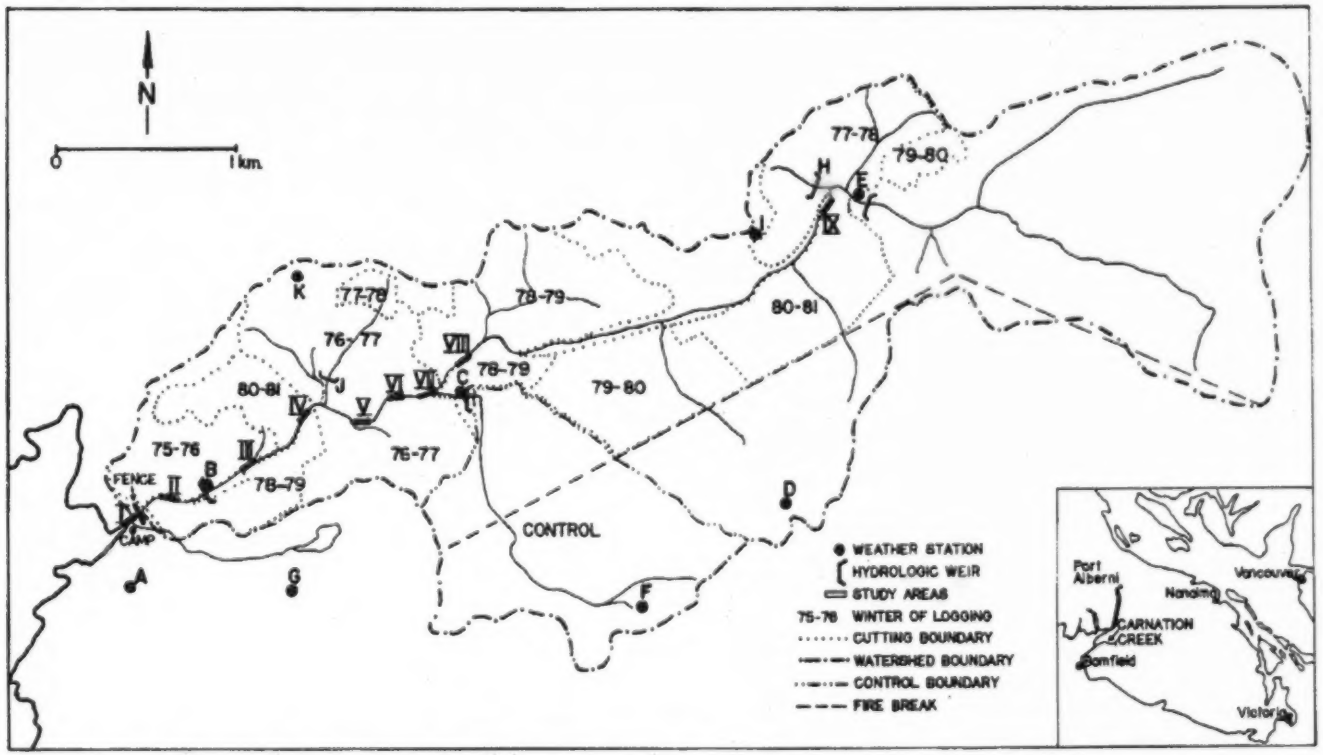

Fig. 2. Carnation Creek Watershed showing the main channel and tributaries; location of hydro-meteorological stations, fish counting fence, stream study sections and clearcuts.

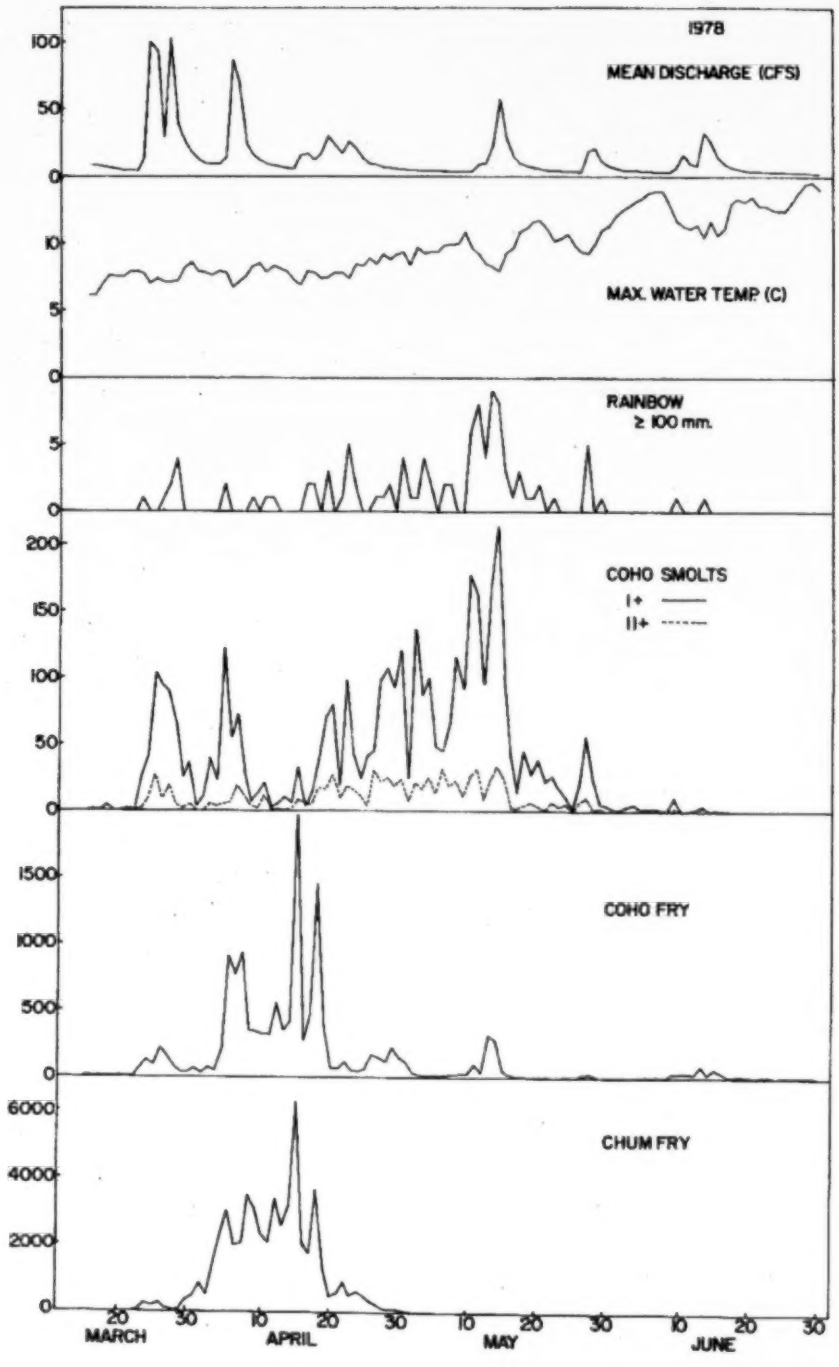

Fig. 3. Outmigration of juvenile salmonids in Carnation Creek in relation to date, water temperature and discharge, 1978.

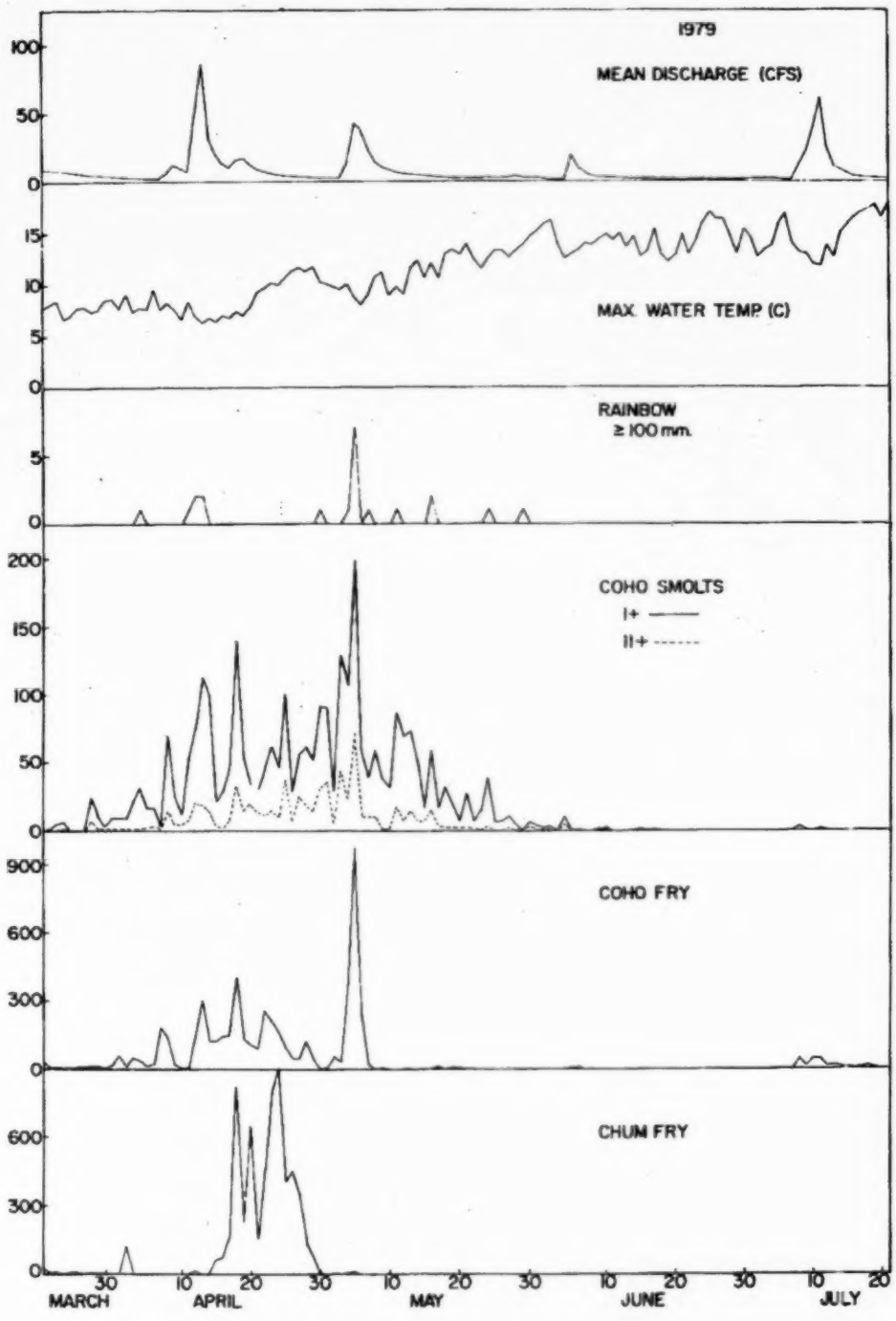

Fig. 4. Outmigration of juvenile salmonids in Carnation Creek in relation to date, water temperature, and discharge, 1979.

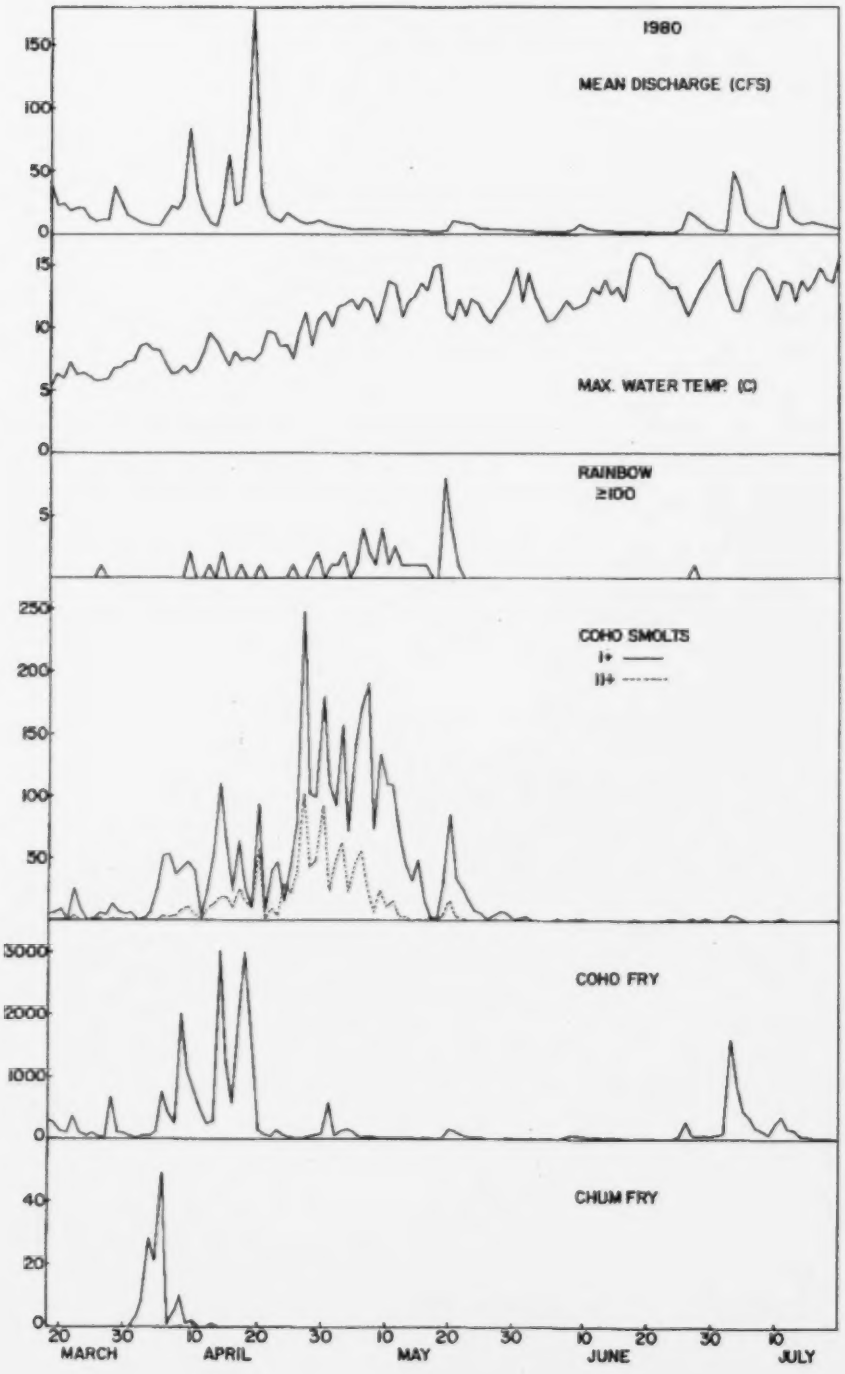

Fig. 5. Outmigration of juvenile salmonids in Carnation Creek in relation to date, water temperature and discharge, 1980.

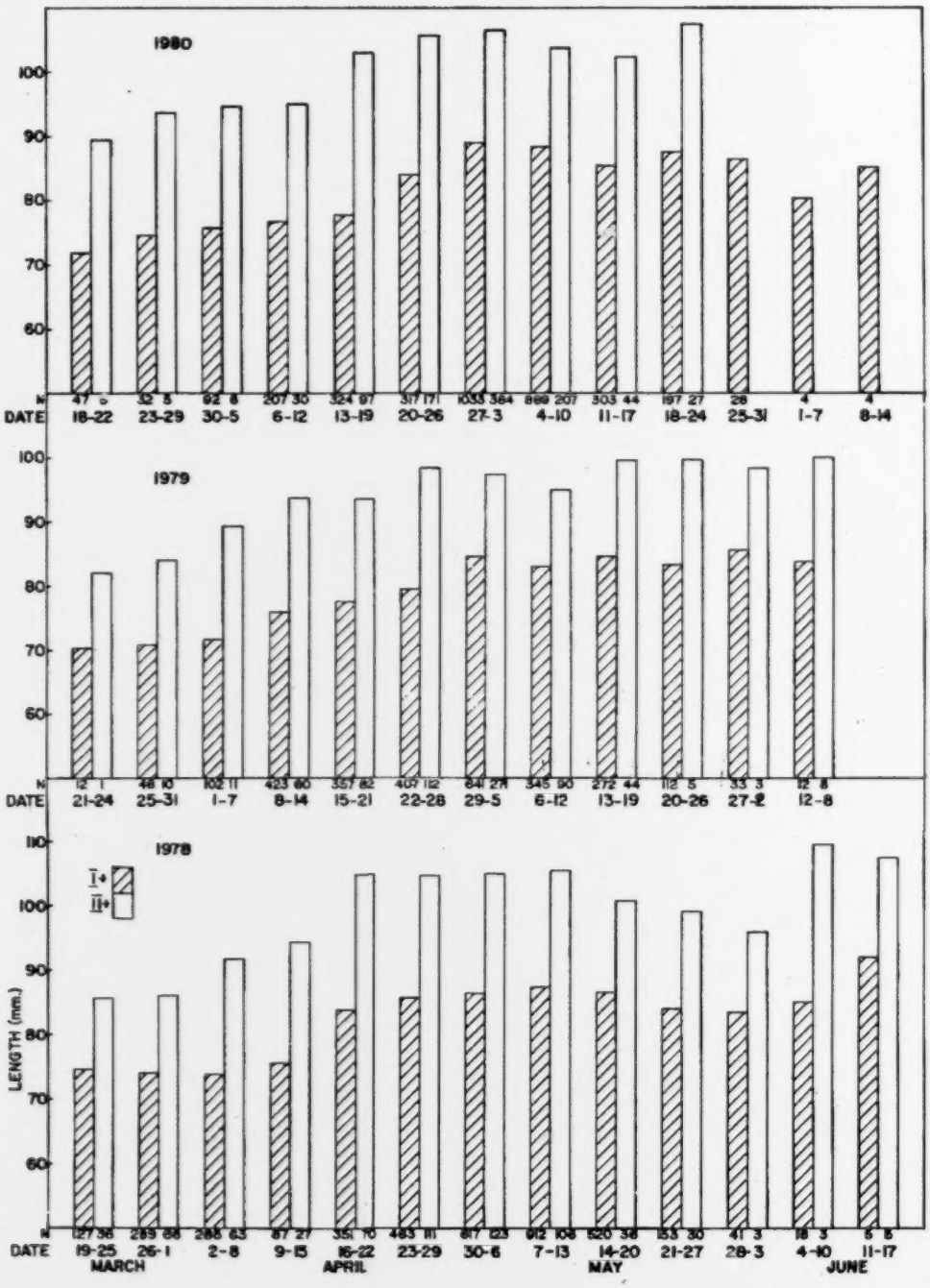

Fig. 6. Weekly mean lengths of age I and II coho smolts (> 59 mm) leaving Carnation Creek in 1978, 1979 and 1980. (Sample size under bars.)

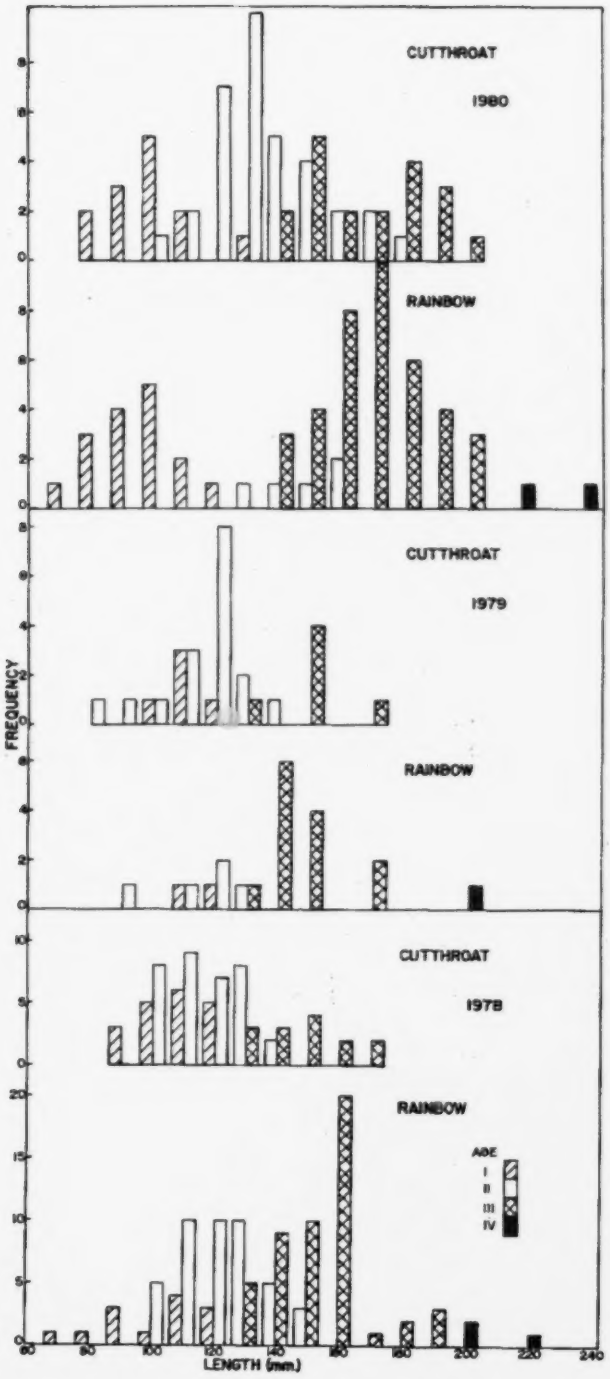

Fig. 7. Length frequency of downstream migrant cutthroat and rainbow trout by age group in Carnation Creek, 1978, 1979, and 1980.

APPENDIX TABLES

APPENDIX I. CARNATION CREEK COHO
JUNE 5-6/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	405.0	36.7	70	477	47	529	7.7	523.6	534.7	0.90	1.05	46.0	0.77	0.07	0.70
	I				5	1	6	0.6	4.7	7.8	0.80	5.69	78.3	64.80	5.87	58.93
III	0	319.3	46.9	55	335	28	366	3.6	361.8	369.3	0.92	1.15	47.1	0.87	0.13	0.75
	I				14	3	18	2.0	15.0	20.7	0.79	5.85	78.8	17.92	2.63	15.29
IV	0	399.5	81.9	56	499	88	606	39.7	593.2	618.4	0.82	1.00	45.1	0.66	0.14	0.52
	I				29	12	49	59.4	34.0	64.9	0.59	4.63	72.3	8.08	1.66	6.42
V	0	292.0	41.3	46	372	27	401	2.8	397.7	404.5	0.93	0.75	41.6	0.73	0.10	0.63
	I				34	7	43	4.4	38.6	47.0	0.79	3.61	66.7	6.82	0.96	5.86
VI	0	434.9	99.3	57	710	55	770	6.3	764.6	774.7	0.92	0.75	41.5	0.57	0.13	0.44
	I				36	1	37	0.0	36.7	37.4	0.97	3.88	68.5	11.74	2.68	9.06
VIII	0	432.2	204.0	74	306	65	389	43.5	375.3	401.7	0.79	0.85	43.0	1.11	0.53	0.59
	I				8	3	13	10.1	6.4	19.2	0.63	4.44	72.5	33.77	15.94	17.83
ALL	0	2282.9	510.1	358	2699	310	3049	64.7	3033.1	3065.3	0.89	0.91	43.9	0.75	0.17	0.58
	I				126	27	160	18.4	151.8	169.0	0.79	4.34	70.9	14.24	3.18	11.05

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	1.31	5287.5	14.42	58349.3	1.44	5814.3	553.3	1.37	12.19	15.08	134.48	1.50	13.40
	I	0.02	62.5	0.17	689.2	0.02	68.7	35.6	0.09	0.78	0.97	8.65	0.10	0.86
III	0	1.14	4633.3	7.79	31543.6	1.34	5431.0	419.6	1.31	11.72	8.95	79.81	1.54	13.74
	I	0.06	225.8	0.38	1537.5	0.07	264.7	104.3	0.33	2.91	2.22	19.84	0.38	3.42
IV	0	1.52	6137.3	7.40	29937.0	1.91	7719.9	608.5	1.52	13.59	7.43	66.27	1.92	17.09
	I	0.12	501.1	0.60	2444.5	0.16	630.4	229.3	0.57	5.12	2.80	24.97	0.72	6.44
V	0	1.37	5559.3	9.71	39305.2	1.60	6475.1	302.3	1.04	9.23	7.32	65.29	1.21	10.76
	I	0.15	593.4	1.04	4195.4	0.17	691.2	154.7	0.53	4.73	3.75	33.42	0.62	5.50
VI	0	1.77	7161.8	7.75	31366.0	2.29	9280.8	578.3	1.33	11.86	5.82	51.95	1.72	15.37
	I	0.09	344.6	0.37	1509.1	0.11	446.5	143.7	0.33	2.95	1.45	12.91	0.43	3.82
VIII	0	0.90	3638.1	1.90	7707.8	1.70	6890.4	329.4	0.76	6.80	1.61	14.40	1.44	12.87
	I	0.03	119.9	0.06	253.9	0.06	227.0	56.9	0.13	1.17	0.28	2.49	0.25	2.22
ALL	0	1.34	5405.5	5.98	24191.8	1.72	6960.9	2780.9	1.22	10.87	5.45	48.63	1.57	13.99
	I	0.07	284.3	0.31	1272.3	0.09	366.1	696.3	0.31	2.72	1.37	12.18	0.39	3.50

APPENDIX I. CARNATION CREEK COHO
JULY 25-27/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	342.6	12.8	71	447	58	514	14.8	505.9	521.3	0.87	1.65	53.5	0.67	0.02	0.64
	I				8	5	21	256.8	-10.7	53.4	0.38	7.30	85.7	16.06	0.60	15.46
III	0	316.9	20.7	55	319	32	355	5.4	349.9	359.2	0.90	1.66	53.5	0.89	0.06	0.84
	I				10	1	11	0.2	10.3	11.9	0.90	6.93	84.4	28.52	1.86	26.66
IV	0	325.2	47.2	58	452	46	503	7.9	497.6	508.8	0.90	1.41	50.9	0.65	0.09	0.55
	I				26	4	31	1.4	28.4	33.1	0.85	5.31	77.1	10.58	1.54	9.05
V	0	270.8	23.2	49	353	32	388	4.6	383.9	392.5	0.91	1.22	48.4	0.70	0.06	0.64
	I				36	6	43	2.4	40.1	46.3	0.83	4.16	73.4	6.27	0.54	5.73
VI	0	352.4	41.0	55	574	62	644	11.7	636.7	650.4	0.89	1.19	47.8	0.55	0.06	0.48
	I				40	7	48	3.1	45.0	52.0	0.82	4.13	73.3	7.27	0.85	6.42
VIII	0	366.1	132.5	74	294	27	324	4.0	319.7	327.7	0.91	1.47	50.8	1.13	0.41	0.72
	I				8	3	13	10.1	6.4	19.2	0.63	5.08	78.3	28.60	10.35	18.25
ALL	0	1974.0	277.4	362	2439	257	2726	46.7	2712.6	2739.9	0.89	1.41	50.6	0.72	0.10	0.62
	I				128	26	161	15.8	152.7	168.6	0.80	4.90	76.3	12.29	1.73	10.56

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	1.50	6067.5	40.13	162401.0	1.56	6303.0	846.8	2.47	22.05	66.16	590.12	2.57	22.90
	I	0.06	252.0	1.67	6745.0	0.06	261.8	155.6	0.45	4.05	12.16	108.47	0.47	4.21
III	0	1.12	4528.0	17.13	69320.6	1.20	4844.5	587.6	1.85	16.54	28.39	253.22	1.98	17.70
	I	0.04	141.8	0.54	2172.3	0.04	151.8	77.1	0.24	2.17	3.72	33.20	0.26	2.32
IV	0	1.55	6262.3	10.66	43146.2	1.81	7325.5	709.1	2.18	19.45	15.02	134.01	2.55	22.75
	I	0.09	382.4	0.65	2634.6	0.11	447.3	163.1	0.50	4.47	3.45	30.81	0.59	5.23
V	0	1.43	5801.3	16.73	67715.7	1.57	6344.8	474.7	1.75	15.64	20.46	182.52	1.92	17.10
	I	0.16	645.6	1.86	7535.8	0.17	706.1	179.9	0.66	5.93	7.75	69.17	0.73	6.48
VI	0	1.83	7390.1	15.70	63519.0	2.07	8363.1	764.2	2.17	19.34	18.64	166.26	2.45	21.89
	I	0.14	556.8	1.18	4785.8	0.16	630.1	200.1	0.57	5.07	4.88	43.54	0.64	5.73
VIII	0	0.88	3578.6	2.44	9887.8	1.39	5608.5	475.8	1.30	11.59	3.59	32.03	2.04	18.17
	I	0.03	141.5	0.10	391.0	0.05	221.8	65.1	0.18	1.59	0.49	4.38	0.28	2.49
ALL	0	1.38	5589.3	9.83	39773.7	1.61	6503.1	3856.7	1.95	17.43	13.90	124.02	2.27	20.28
	I	0.08	329.3	0.58	2343.4	0.09	383.2	787.7	0.40	3.56	2.84	25.33	0.46	4.14

APPENDIX I. CARNATION CREEK COHO
SEPT 20-OCT 5/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	507.7	57.2	71	201	25	230	5.9	224.7	234.4	0.88	2.52	61.0	2.21	0.25	1.96
	I				7	3	12	17.2	3.9	20.6	0.57	6.80	85.0	41.44	4.67	36.78
III	0	401.3	85.0	55	133	8	142	0.7	139.9	143.1	0.94	2.52	60.8	2.84	0.60	2.24
	I				15	1	16	0.1	15.5	16.7	0.93	8.33	90.5	24.97	5.29	19.68
IV	0	423.5	124.8	58	277	33	314	7.3	309.1	319.9	0.88	2.18	57.8	1.35	0.40	0.95
	I				16	4	21	4.0	17.4	25.3	0.75	6.75	84.7	19.85	5.85	14.00
V	0	330.4	97.7	49	176	34	218	18.5	209.5	226.7	0.81	1.68	54.4	1.51	0.45	1.07
	I				30	2	32	0.2	31.3	33.0	0.93	5.26	77.3	10.28	3.04	7.24
VI	0	435.1	127.8	56	236	22	260	3.3	256.6	263.9	0.91	1.61	53.5	1.67	0.49	1.18
	I				40	2	42	0.1	41.4	42.8	0.95	5.25	77.3	10.33	3.04	7.30
VIII	0	453.6	218.9	72	115	8	124	0.8	121.8	125.4	0.93	1.93	56.4	3.67	1.77	1.90
	I				7	0	7	0.0	7.0	7.0	1.00	5.73	79.7	64.80	31.27	33.53
ALL	0	2551.6	711.4	361	1138	130	1285	26.9	1274.4	1295.1	0.89	2.06	57.1	1.99	0.55	1.43
	I				115	12	128	2.1	125.5	131.3	0.90	6.03	80.9	19.87	5.54	14.33

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	0.45	1829.8	4.01	16241.2	0.51	2062.1	577.6	1.14	10.15	10.10	90.08	1.28	11.44
	I	0.02	97.6	0.21	866.7	0.03	110.0	83.3	0.16	1.46	1.46	13.00	0.19	1.65
III	0	0.35	1427.1	1.66	6737.6	0.45	1810.6	356.7	0.89	7.93	4.20	37.43	1.13	10.06
	I	0.04	162.1	0.19	765.2	0.05	205.6	133.9	0.33	2.98	1.58	14.05	0.42	3.78
IV	0	0.74	3005.0	2.52	10197.4	1.05	4260.6	686.4	1.62	14.46	5.50	49.06	2.30	20.50
	I	0.05	203.9	0.17	691.8	0.07	289.0	144.0	0.34	3.03	1.15	10.29	0.48	4.30
V	0	0.66	2672.0	2.23	9036.0	0.94	3793.8	366.2	1.11	9.89	3.75	33.43	1.57	14.04
	I	0.10	393.7	0.33	1331.4	0.14	559.0	169.2	0.51	4.57	1.73	15.44	0.73	6.48
VI	0	0.60	2420.8	2.04	8241.6	0.85	3427.5	419.5	0.96	8.60	3.28	29.28	1.37	12.18
	I	0.10	391.6	0.33	1333.3	0.14	554.5	221.2	0.51	4.54	1.73	15.44	0.72	6.42
VIII	0	0.27	1102.7	0.56	2285.1	0.53	2131.2	237.9	0.52	4.68	1.09	9.70	1.01	9.04
	I	0.02	62.5	0.03	129.4	0.03	120.7	40.1	0.09	0.79	0.18	1.63	0.17	1.52
ALL	0	0.50	2037.7	1.81	7308.8	0.70	2825.5	2640.4	1.03	9.23	3.71	33.11	1.43	12.80
	I	0.05	203.6	0.18	730.4	0.07	282.4	773.9	0.30	2.71	1.09	9.70	0.42	3.75

APPENDIX I. CARNATION CREEK COHO
JUNE 4-13/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	427.8	47.8	71	550	100	672	47.9	658.4	686.1	0.82	0.84	43.3	0.64	0.07	0.57
	I				19	2	21	0.4	20.0	22.4	0.89	5.07	75.6	20.15	2.25	17.89
III	0	361.8	54.3	55	457	16	474	0.7	471.9	475.2	0.96	1.20	48.6	0.76	0.11	0.65
	I				32	4	37	1.0	34.6	38.5	0.88	5.45	77.0	9.89	1.48	8.41
IV	0	375.1	66.4	59	705	74	788	13.4	780.4	795.0	0.90	0.95	45.0	0.48	0.08	0.39
	I				56	5	61	0.7	59.8	63.2	0.91	4.66	73.6	6.10	1.08	5.02
V	0	233.9	99.4	61	62	12	77	6.6	71.8	82.0	0.81	1.22	48.4	3.04	1.29	1.75
	I				35	11	51	20.6	42.0	60.1	0.69	4.11	70.2	4.58	1.95	2.64
VI	0	342.4	38.0	79	167	54	247	110.2	225.8	267.8	0.68	1.06	46.4	1.39	0.15	1.23
	I				20	8	33	34.6	21.6	45.1	0.60	3.84	68.4	10.27	1.14	9.13
VIII	0	470.2	197.3	74	905	233	1219	248.1	1187.3	1250.3	0.74	0.93	44.5	0.39	0.16	0.22
	I				12	2	14	0.8	12.6	16.2	0.83	5.14	76.3	32.65	13.70	18.95
ALL	0	2211.2	503.2	399	2846	489	3436	209.3	3407.5	3465.4	0.83	0.97	45.2	0.64	0.15	0.50
	I				174	32	213	15.7	205.3	221.1	0.82	4.64	73.1	10.37	2.36	8.01

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	1.57	6359.2	14.06	56913.9	1.77	7159.2	564.5	1.32	11.77	11.81	105.34	1.49	13.25
	I	0.05	200.9	0.44	1797.9	0.06	226.2	107.7	0.25	2.25	2.25	20.10	0.28	2.53
III	0	1.31	5297.3	8.72	35296.1	1.54	6232.8	567.9	1.57	14.00	10.46	93.29	1.85	16.47
	I	0.10	409.1	0.67	2725.7	0.12	481.3	199.4	0.55	4.92	3.67	32.75	0.65	5.78
IV	0	2.10	8498.4	11.86	48008.1	2.55	10326.3	748.4	2.00	17.80	11.27	100.54	2.42	21.63
	I	0.16	663.4	0.93	3747.8	0.20	806.1	286.6	0.76	6.81	4.32	38.50	0.93	8.28
V	0	0.33	1330.2	0.77	3130.1	0.57	2313.3	93.5	0.40	3.57	0.94	8.39	0.70	6.20
	I	0.22	883.1	0.51	2078.1	0.38	1535.8	210.0	0.90	8.01	2.11	18.84	1.56	13.92
VI	0	0.72	2917.1	6.49	26284.8	0.81	3281.3	260.9	0.76	6.80	6.86	61.23	0.86	7.64
	I	0.10	394.0	0.88	3550.0	0.11	443.2	128.1	0.37	3.34	3.37	30.08	0.42	3.75
VIII	0	2.59	10490.1	6.18	24999.6	4.47	18074.1	1133.1	2.41	21.50	5.74	51.23	4.15	37.04
	I	0.03	123.9	0.07	295.4	0.05	213.5	74.0	0.16	1.40	0.38	3.35	0.27	2.42
ALL	0	1.55	6289.5	6.83	27637.8	2.01	8142.5	3333.1	1.51	13.45	6.62	59.08	1.95	17.41
	I	0.10	390.2	0.42	1714.8	0.12	505.2	989.3	0.45	3.99	1.97	17.54	0.58	5.17

APPENDIX I. CARNATION CREEK COHO
JULY 24-26/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	480.2	35.0	67	368	45	419	10.4	412.8	425.7	0.88	1.46	51.1	1.15	0.08	1.06
	I				15	5	23	11.3	15.8	29.2	0.67	4.84	77.0	21.34	1.56	19.79
III	0	384.1	70.4	55	373	21	395	1.6	392.7	397.8	0.94	1.99	56.7	0.97	0.18	0.79
	I				32	4	37	1.0	34.6	38.5	0.88	5.41	80.1	10.50	1.92	8.58
IV	0	369.4	73.7	53	556	82	652	26.3	641.9	662.4	0.85	1.51	51.6	0.57	0.11	0.45
	I				45	6	52	1.6	49.4	54.5	0.87	5.13	78.7	7.11	1.42	5.69
V	0	208.0	88.4	57	80	9	90	1.8	87.4	92.8	0.89	1.94	55.5	2.31	0.98	1.33
	I				21	5	28	4.4	23.4	31.7	0.76	4.54	74.0	7.55	3.21	4.34
VI	0	328.1	1.6	76	168	14	183	1.8	180.6	185.9	0.92	1.77	54.0	1.79	0.01	1.78
	I				11	1	12	0.1	11.3	12.8	0.91	4.71	75.3	27.12	0.13	26.98
VIII	0	499.3	151.0	76	635	132	802	84.2	783.3	820.0	0.79	1.34	49.1	0.62	0.19	0.43
	I				5	3	13	112.5	-8.7	33.7	0.40	5.47	80.9	39.94	12.08	27.86
ALL	0	2269.1	420.1	384	2180	303	2532	87.3	2513.2	2550.6	0.86	1.56	51.9	0.90	0.17	0.73
	I				129	24	158	12.1	151.5	165.4	0.81	5.04	77.9	14.32	2.65	11.67

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	0.87	3533.5	11.98	48479.5	0.94	3811.3	612.8	1.28	11.38	17.51	156.16	1.38	12.28
	I	0.05	189.6	0.64	2601.6	0.05	204.5	109.0	0.23	2.02	3.11	27.77	0.24	2.18
III	0	1.03	4164.5	5.61	22721.4	1.26	5099.1	787.6	2.05	18.29	11.19	99.80	2.51	22.40
	I	0.10	385.3	0.52	2102.3	0.12	471.8	198.0	0.52	4.60	2.81	25.09	0.63	5.63
IV	0	1.77	7145.1	8.85	35812.7	2.21	8925.9	983.0	2.66	23.74	13.34	118.97	3.32	29.65
	I	0.14	568.8	0.70	2851.2	0.18	710.6	266.2	0.72	6.43	3.61	32.21	0.90	8.03
V	0	0.43	1753.8	1.02	4126.7	0.75	3050.2	174.5	0.84	7.48	1.97	17.61	1.46	13.01
	I	0.13	536.3	0.31	1261.8	0.23	932.7	125.1	0.60	5.36	1.41	12.62	1.05	9.33
VI	0	0.56	2260.6	114.55	463565.0	0.56	2271.7	324.1	0.99	8.81	202.54	1806.66	0.99	8.85
	I	0.04	149.2	7.56	30605.4	0.04	150.0	57.0	0.17	1.55	35.65	318.01	0.17	1.56
VIII	0	1.61	6497.6	5.31	21485.0	2.30	9314.5	1070.6	2.14	19.13	7.09	63.24	3.07	27.42
	I	0.03	101.3	0.08	335.0	0.04	145.2	68.4	0.14	1.22	0.45	4.04	0.20	1.75
ALL	0	1.12	4515.7	6.03	24391.0	1.37	5541.7	3945.0	1.74	15.51	9.39	83.76	2.13	19.03
	I	0.07	282.7	0.38	1526.8	0.09	346.9	799.2	0.35	3.14	1.90	16.97	0.43	3.86

APPENDIX I. CARNATION CREEK COHO
SEPTEMBER 18-20/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	414.5	38.5	70	240	47	298	26.3	288.2	308.7	0.80	2.10	57.4	1.39	0.13	1.26
	I				34	7	43	4.4	38.6	47.0	0.79	5.73	79.5	9.68	0.90	8.78
III	0	394.5	84.3	55	217	19	238	2.6	234.6	241.1	0.91	2.61	61.9	1.66	0.35	1.30
	I				35	8	45	6.3	40.3	50.4	0.77	6.24	82.0	8.70	1.86	6.84
IV	0	434.0	66.7	59	450	41	495	6.0	490.2	500.0	0.91	2.07	57.0	0.88	0.13	0.74
	I				37	7	46	3.6	41.8	49.5	0.81	6.20	81.8	9.51	1.46	8.05
V	0	230.9	59.7	58	60	6	67	1.0	64.7	68.7	0.90	2.63	62.7	3.46	0.90	2.57
	I				21	2	23	0.3	22.1	24.3	0.90	5.32	78.7	9.95	2.57	7.38
VI	0	368.4	23.7	77	176	12	189	1.2	186.7	191.0	0.93	2.40	60.7	1.95	0.13	1.82
	I				17	6	26	16.3	18.2	34.4	0.65	4.44	74.2	14.02	0.90	13.12
VIII	0	429.2	164.0	72	350	45	402	11.3	394.9	408.4	0.87	1.82	55.1	1.07	0.41	0.66
	I				13	2	15	0.7	13.7	17.0	0.85	5.61	79.7	27.94	10.67	17.26
ALL	0	2271.5	436.9	391	1493	170	1685	35.0	1673.0	1696.7	0.89	2.15	58.0	1.35	0.26	1.09
	I				157	32	197	19.5	188.4	206.0	0.80	5.74	79.9	11.52	2.22	9.30

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	0.72	2913.9	7.75	31371.7	0.79	3212.3	627.5	1.51	13.50	16.30	145.38	1.67	14.89
	I	0.10	418.0	1.11	4500.6	0.11	460.8	245.2	0.59	5.28	6.37	56.82	0.65	5.82
III	0	0.60	2439.7	2.82	11417.2	0.77	3102.7	621.8	1.58	14.06	7.38	65.79	2.00	17.88
	I	0.12	465.4	0.54	2178.1	0.15	591.9	283.1	0.72	6.40	3.36	29.96	0.91	8.14
IV	0	1.14	4616.8	7.42	30040.6	1.35	5455.2	1024.5	2.36	21.06	15.36	137.01	2.79	24.88
	I	0.11	425.5	0.68	2768.8	0.12	502.8	283.1	0.65	5.82	4.24	37.86	0.77	6.88
V	0	0.29	1168.5	1.12	4519.3	0.39	1575.9	175.1	0.76	6.76	2.93	26.16	1.02	9.12
	I	0.10	406.8	0.39	1573.4	0.14	548.7	123.6	0.54	4.77	2.07	18.46	0.72	6.44
VI	0	0.51	2074.9	7.97	32252.7	0.55	2217.6	453.8	1.23	10.99	19.15	170.78	1.32	11.74
	I	0.07	288.6	1.11	4486.3	0.08	308.5	116.6	0.32	2.82	4.82	43.90	0.34	3.02
VIII	0	0.94	3787.1	2.45	9911.2	1.51	6129.1	730.7	1.70	15.19	4.46	39.74	2.76	24.58
	I	0.04	144.9	0.09	379.1	0.06	234.5	86.2	0.20	1.79	0.53	4.69	0.32	2.90
ALL	0	0.74	3001.8	3.86	15606.7	0.92	3716.6	3627.0	1.60	14.24	8.30	74.05	1.98	17.63
	I	0.09	351.3	0.45	1826.6	0.11	435.0	1131.8	0.50	4.44	2.59	23.11	0.62	5.50

APPENDIX I. CARNATION CREEK COHO
JULY 22-24/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	412.2	27.6	65	384	54	447	15.9	438.9	454.8	0.86	1.20	47.0	0.92	0.06	0.86
	I				36	2	38	0.1	37.3	38.9	0.94	4.02	72.1	10.81	0.72	10.09
III	0	320.2	110.8	55	345	57	413	22.6	403.8	422.8	0.83	1.38	49.2	0.77	0.27	0.51
	I				33	5	39	1.7	36.3	41.5	0.85	5.79	78.9	8.23	2.85	5.38
IV	0	328.8	120.5	54	621	111	756	51.4	741.8	770.5	0.82	1.23	47.4	0.43	0.16	0.28
	I				60	6	67	1.0	64.7	68.7	0.90	4.35	73.4	4.93	1.81	3.12
V	0	230.0	42.4	55	149	68	274	517.5	228.6	319.6	0.54	1.07	46.0	0.84	0.15	0.68
	I				10	4	17	17.3	8.4	25.0	0.60	5.13	78.7	13.80	2.54	11.26
VI	0	386.8	98.9	75	519	52	577	8.7	570.9	582.7	0.90	1.06	45.8	0.67	0.17	0.50
	I				18	0	18	0.0	18.0	18.0	1.00	5.30	78.0	21.49	5.49	15.99
VIII	0	407.5	133.3	68	534	123	694	99.3	673.9	713.7	0.77	1.17	47.5	0.59	0.19	0.40
	I				29	9	42	16.2	34.0	50.1	0.69	5.04	75.9	9.69	3.17	6.52
ALL	0	2085.5	533.5	372	2552	465	3121	224.0	3090.7	3150.5	0.82	1.19	47.2	0.67	0.17	0.50
	I				186	26	216	7.6	210.7	221.7	0.86	4.81	75.2	9.65	2.47	7.18

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	1.08	4387.1	16.19	65519.8	1.16	4701.9	535.2	1.30	11.58	19.39	172.98	1.39	12.41
	I	0.09	374.2	1.38	5589.2	0.10	401.1	153.1	0.37	3.31	5.55	49.50	0.40	3.55
III	0	1.29	5223.5	3.73	15095.2	1.97	7987.3	572.2	1.79	15.94	5.16	46.07	2.73	24.38
	I	0.12	491.6	0.35	1420.6	0.19	751.7	225.1	0.70	6.27	2.03	18.12	1.07	9.59
IV	0	2.30	9307.1	6.28	25395.6	3.63	14691.2	931.1	2.83	25.26	7.73	68.92	4.47	39.87
	I	0.20	820.6	0.55	2239.0	0.32	1295.2	290.1	0.88	7.87	2.41	21.48	1.39	12.42
V	0	1.19	4822.7	6.46	26161.0	1.46	5912.7	292.7	1.27	11.35	6.90	61.57	1.56	13.92
	I	0.07	293.3	0.39	1590.8	0.09	359.5	85.6	0.37	3.32	2.02	18.00	0.46	4.07
VI	0	1.49	6034.8	5.83	23602.3	2.00	8107.9	612.2	1.58	14.12	6.19	55.22	2.13	18.97
	I	0.05	188.3	0.18	736.6	0.06	253.0	95.5	0.25	2.20	0.97	8.61	0.33	2.96
VIII	0	1.70	6890.4	5.20	21064.1	2.53	10240.2	810.1	1.99	17.73	6.08	54.21	2.95	26.35
	I	0.10	417.6	0.32	1276.6	0.15	620.6	212.1	0.52	4.64	1.59	14.19	0.77	6.90
ALL	0	1.50	6055.7	5.85	23672.1	2.01	8137.3	3710.6	1.78	15.87	6.96	62.04	2.39	21.33
	I	0.10	419.6	0.41	1640.2	0.14	563.8	1039.1	0.50	4.44	1.95	17.37	0.67	5.97

APPENDIX I. CARNATION CREEK COHO
SEPTEMBER 16-18/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	0	419.5	14.3	68	241	42	292	18.5	283.3	300.5	0.83	1.66	53.2	1.44	0.05	1.39
	I				36	11	52	18.9	43.2	60.5	0.69	4.74	73.5	8.09	0.28	7.82
III	0	308.0	53.4	55	279	21	302	2.3	298.7	304.8	0.92	1.77	54.3	1.02	0.18	0.84
	I				56	1	57	0.0	56.7	57.3	0.98	5.81	77.7	5.40	0.94	4.47
IV	0	335.1	115.0	57	565	81	660	24.7	649.6	669.5	0.86	1.44	50.4	0.51	0.17	0.33
	I				51	11	65	7.6	59.5	70.5	0.78	5.31	76.3	5.15	1.77	3.38
V	0	232.0	80.8	54	270	16	287	1.3	284.7	289.3	0.94	1.31	49.5	0.81	0.28	0.53
	I				19	3	23	1.1	20.5	24.7	0.84	5.29	76.4	10.28	3.58	6.70
VI	0	362.9	74.8	75	360	50	418	14.4	410.5	425.6	0.86	1.41	50.6	0.87	0.18	0.69
	I				8	7	41	3969.0	-85.5	166.5	0.22	5.80	79.8	8.96	1.85	7.11
VIII	0	392.1	105.8	68	522	82	619	29.5	608.4	630.1	0.84	1.58	52.7	0.63	0.17	0.46
	I				36	11	52	18.9	43.2	60.5	0.69	5.45	78.4	7.56	2.04	5.52
ALL	0	2049.6	444.1	377	2237	292	2573	75.4	2555.5	2590.2	0.87	1.52	51.7	0.80	0.17	0.62
	I				207	44	263	29.5	252.0	273.7	0.79	5.37	76.7	7.80	1.69	6.11

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	0	0.70	2815.7	20.41	82599.6	0.72	2915.0	483.9	1.15	10.29	33.84	301.85	1.19	10.65
	I	0.12	500.1	3.63	14671.1	0.13	517.8	245.5	0.59	5.22	17.17	153.16	0.61	5.41
III	0	0.98	3964.3	5.65	22865.5	1.19	4795.8	535.1	1.74	15.50	10.02	89.39	2.10	18.75
	I	0.19	749.2	1.07	4321.2	0.22	906.3	331.2	1.08	9.59	6.20	55.32	1.30	11.60
IV	0	1.97	7965.5	5.74	23210.6	3.00	12127.3	947.8	2.83	25.23	8.24	73.51	4.31	38.41
	I	0.19	785.3	0.57	2288.3	0.30	1195.6	345.4	1.03	9.20	3.00	26.79	1.57	14.00
V	0	1.24	5006.6	3.55	14375.3	1.90	7682.0	376.4	1.62	14.47	4.66	41.55	2.49	22.20
	I	0.10	393.6	0.28	1130.1	0.15	603.9	119.4	0.51	4.59	1.48	13.18	0.79	7.04
VI	0	1.15	4662.2	5.59	22619.1	1.45	5872.6	591.3	1.63	14.53	7.90	70.51	2.05	18.31
	I	0.11	451.6	0.54	2191.2	0.14	568.9	235.0	0.65	5.78	3.14	28.02	0.82	7.27
VIII	0	1.58	6391.8	5.85	23688.4	2.16	8753.9	977.2	2.49	22.23	9.24	82.38	3.41	30.44
	I	0.13	535.1	0.49	1983.0	0.18	732.8	282.3	0.72	6.42	2.67	23.80	0.99	8.79
ALL	0	1.26	5080.2	5.79	23445.8	1.60	6485.4	3904.1	1.90	16.99	8.79	78.42	2.43	21.69
	I	0.13	519.1	0.59	2395.6	0.16	662.6	1412.0	0.69	6.15	3.18	28.36	0.88	7.84

APPENDIX II. CARNATION CREEK RAINBOW
JUNE 5-8/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2282.9	510.1	358	0	1						1.72	55.0			
	I				12	1	13	0.1	12.4	13.8	0.92	5.67	81.5	174.39	38.97	135.42
	II				4	1	5	1.0	3.3	7.3	0.75	15.44	114.4	428.04	95.64	332.40

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0													
	I	0.01	23.2	0.03	103.9	0.01	29.9	74.2	0.03	0.29	0.15	1.30	0.04	0.37
	II	0.00	9.5	0.01	42.3	0.00	12.2	82.3	0.04	0.32	0.16	1.44	0.05	0.41

APPENDIX II. CARNATION CREEK RAINBOW
JULY 25-27/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	1974.0	277.4	362	50	6	57	1.3	54.5	59.1	0.88	1.06	47.6	34.74	4.88	29.86
	I				18	5	25	6.5	19.8	30.0	0.72	7.59	92.3	79.20	11.13	68.07
	II				5	1	6	0.6	4.7	7.8	0.80	16.45	119.0	315.84	44.38	271.46

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.03	116.5	0.20	828.9	0.03	135.5	60.2	0.03	0.27	0.22	1.93	0.04	0.32
	I	0.01	51.1	0.09	363.6	0.01	59.5	189.2	0.10	0.85	0.68	6.08	0.11	0.99
	II	0.00	12.8	0.02	91.2	0.00	14.9	102.8	0.05	0.46	0.37	3.31	0.06	0.54

APPENDIX II. CARNATION CREEK RAINBOW
SEPT 20-OCT 5/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2551.6	711.4	361	14	2	16	0.6	14.8	17.9	0.86	2.45	63.7	156.22	43.56	112.67
	I				10	1	11	0.2	10.3	11.9	0.90	11.56	106.6	229.64	64.03	165.62
	II				5	2	8	8.6	2.5	14.2	0.60	21.28	129.5	306.19	85.37	220.82
	III				1	0	1	0.0	1.0	1.0	1.00	47.16	169.0	2551.60	711.40	1840.20

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.01	25.9	0.02	92.9	0.01	35.9	40.0	0.02	0.14	0.06	0.50	0.02	0.19
	I	0.00	17.6	0.02	63.2	0.01	24.4	128.4	0.05	0.45	0.18	1.61	0.07	0.62
	II	0.00	13.2	0.01	47.4	0.00	18.3	177.4	0.07	0.62	0.25	2.22	0.10	0.86
	III	0.00	1.6	0.00	5.7	0.00	2.2	47.2	0.02	0.16	0.07	0.59	0.03	0.23

APPENDIX II. CARNATION CREEK RAINBOW
JUNE 4-13/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	I	2211.2	503.2	399	9	3	14	6.8	8.3	18.7	0.67	6.65	85.7	163.79	37.27	126.52
	II				3	2	9	180.0	-17.8	35.8	0.33	12.92	109.2	245.69	55.91	189.78

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	I	0.01	24.7	0.03	108.6	0.01	32.0	89.8	0.04	0.36	0.18	1.59	0.05	0.47
	II	0.00	16.5	0.02	72.4	0.01	21.3	116.2	0.05	0.47	0.23	2.06	0.07	0.61

APPENDIX II. CARNATION CREEK RAINBOW
JULY 24-26/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	I	2269.1	420.1	384	6	1	7	0.4	5.9	8.5	0.83	9.51	96.6	315.15	58.35	256.81
	II				1	0	1	0.0	1.0	1.0	1.00	15.20	115.0	2269.10	420.10	1849.00

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	I	0.00	12.8	0.02	69.4	0.00	15.8	68.5	0.03	0.27	0.16	1.45	0.04	0.33
	II	0.00	1.8	0.00	9.6	0.00	2.2	15.2	0.01	0.06	0.04	0.32	0.01	0.07

APPENDIX II. CARNATION CREEK RAINBOW
SEPTEMBER 18-20/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	II	2271.5	436.9	391	3	1	5	2.3	1.5	7.5	0.67	19.27	124.7	504.78	97.09	407.69

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	II	0.00	8.0	0.01	41.7	0.00	9.9	86.7	0.04	0.34	0.20	1.77	0.05	0.42

APPENDIX II. CARNATION CREEK RAINBOW
JULY 22-24/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2085.5	533.5	372	10	3	14	4.9	9.9	18.7	0.70	0.68	41.5	145.98	37.34	108.64
	I				1	1						8.12	92.5			
	II				1	0	1	0.0	1.0	1.0	1.00	19.58	124.0	2085.50	533.50	1552.00
	III				2	0	2	0.0	2.0	2.0	1.00	73.99	192.5	1042.75	266.75	776.00

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.01	27.7	0.03	108.4	0.01	37.3	9.7	0.00	0.04	0.02	0.16	0.01	0.06
	I													
	II	0.00	1.9	0.00	7.6	0.00	2.6	19.6	0.01	0.08	0.04	0.33	0.01	0.11
	III	0.00	3.9	0.00	15.2	0.00	5.2	148.0	0.07	0.63	0.28	2.47	0.10	0.85

APPENDIX II. CARNATION CREEK RAINBOW
SEPT 16-18/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2049.6	444.1	377	20	8	33	34.6	21.6	45.1	0.60	3.28	68.0	61.49	13.32	48.17
	I				2	0	2	0.0	2.0	2.0	1.00	10.15	98.0	1024.80	222.05	802.75
	II				3	0	3	0.0	3.0	3.0	1.00	37.99	156.0	683.20	148.03	535.17

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.02	65.8	0.08	303.8	0.02	84.0	109.5	0.05	0.48	0.25	2.20	0.07	0.61
	I	0.00	3.9	0.00	18.2	0.00	5.0	20.3	0.01	0.09	0.05	0.41	0.01	0.11
	II	0.00	5.9	0.01	27.3	0.00	7.6	114.0	0.06	0.50	0.26	2.29	0.07	0.63

APPENDIX III. CARNATION CREEK CUTTHROAT
JUNE 5-8/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2282.9	510.1	358	16	6	26	20.3	16.6	34.6	0.63	0.31	31.5	89.18	19.93	69.25
	I				10	1	11	0.2	10.3	11.9	0.90	6.55	81.9	205.46	45.91	159.55
	II				5	0	5	0.0	5.0	5.0	1.00	15.69	116.0	456.58	102.02	354.56
	III				1	2						30.27	150.3			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.01	45.4	0.05	203.1	0.01	58.4	8.0	0.00	0.03	0.02	0.14	0.00	0.04
	I	0.00	19.7	0.02	88.2	0.01	25.4	72.8	0.03	0.28	0.14	1.27	0.04	0.37
	II	0.00	8.9	0.01	39.7	0.00	11.4	78.4	0.03	0.31	0.15	1.37	0.04	0.39
	III													

APPENDIX III. CARNATION CREEK CUTTHROAT
JULY 25-27/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	1974.0	277.4	362	88	0	88	0.0	88.0	88.0	1.00	0.89	44.5	22.43	3.15	19.28
	I				10	0	10	0.0	10.0	10.0	1.00	6.37	84.9	197.40	27.74	169.66
	II				4	0	4	0.0	4.0	4.0	1.00	17.83	123.5	493.50	69.35	424.15
	III				3	0	3	0.0	3.0	3.0	1.00	38.79	159.0	658.00	92.47	565.53
	IV				1	0	1	0.0	1.0	1.0	1.00	101.32	220.0	1974.00	277.40	1696.60

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.04	180.4	0.32	1283.8	0.05	209.9	78.4	0.04	0.35	0.28	2.52	0.05	0.41
	I	0.01	20.5	0.04	145.9	0.01	23.9	63.7	0.03	0.29	0.23	2.05	0.04	0.33
	II	0.00	8.2	0.01	58.4	0.00	9.5	71.3	0.04	0.32	0.26	2.29	0.04	0.38
	III	0.00	6.2	0.01	43.8	0.00	7.2	116.4	0.06	0.53	0.42	3.74	0.07	0.61
	IV	0.00	2.1	0.00	14.6	0.00	2.4	101.3	0.05	0.46	0.37	3.26	0.06	0.53

APPENDIX III. CARNATION CREEK CUTTHROAT
SEPT 20-OCT 5/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2551.6	711.4	361	81	22	111	27.0	100.8	121.6	0.73	1.64	55.0	22.95	6.40	16.55
	I				12	3	16	3.0	12.6	19.4	0.75	7.46	91.6	159.48	44.46	115.01
	II				4	4						23.67	134.0			
	III				2	1	4	12.0	-2.9	10.9	0.50	47.14	185.7	637.90	177.85	460.05

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.04	176.4	0.16	632.6	0.06	244.6	182.8	0.07	0.64	0.26	2.29	0.10	0.89
	I	0.01	25.4	0.02	91.0	0.01	35.2	119.4	0.05	0.42	0.17	1.50	0.06	0.58
	II													
	III	0.00	6.3	0.01	22.8	0.00	8.8	188.6	0.07	0.66	0.27	2.36	0.10	0.91

APPENDIX III CARNATION CREEK CUTTHROAT
JUNE 4-13/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2211.2	503.2	399	1	1						0.16	25.5			
	I				7	2	10	2.8	6.4	13.2	0.71	7.73	89.8	225.63	51.35	174.29
	II				5	1	6	0.6	4.7	7.8	0.80	14.11	110.8	353.79	80.51	273.28
	III				0	1						36.40	155.0			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0													
	I	0.00	17.9	0.02	78.8	0.01	23.2	75.8	0.03	0.31	0.15	1.34	0.04	0.40
	II	0.00	11.4	0.01	50.3	0.00	14.8	88.2	0.04	0.36	0.18	1.56	0.05	0.46
	III													

APPENDIX III. CARNATION CREEK CUTTHROAT
JULY 24-26/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2269.1	420.1	384	62	18	87	26.6	77.1	97.7	0.71	0.67	40.7	25.97	4.81	21.16
	I				4	2	8	24.0	-1.8	17.8	0.50	9.76	95.0	283.64	52.51	231.13
	II				3	1	5	2.3	1.5	7.5	0.67	23.15	131.5	504.24	93.36	410.89
	III				2	0	2	0.0	2.0	2.0	1.00	62.69	190.5	1134.55	210.05	924.50

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.04	155.8	0.21	841.6	0.05	191.2	58.9	0.03	0.23	0.14	1.25	0.03	0.28
	I	0.00	14.3	0.02	77.1	0.00	17.5	78.0	0.03	0.31	0.19	1.66	0.04	0.38
	II	0.00	8.0	0.01	43.4	0.00	9.8	104.2	0.05	0.41	0.25	2.21	0.06	0.50
	III	0.00	3.6	0.00	19.3	0.00	4.4	125.4	0.06	0.49	0.30	2.66	0.07	0.60

APPENDIX III. CARNATION CREEK CUTTHROAT
SEPTEMBER 18-20/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	POP. C1	POP. C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2271.5	436.9	391	27	10	43	32.3	31.5	54.2	0.63	1.45	53.3	52.97	10.19	42.78
	I				10	1	11	0.2	10.3	11.9	0.90	8.84	96.5	204.43	39.32	165.11
	II				1	0	1	0.0	1.0	1.0	1.00	25.82	140.0	2271.50	436.90	1834.60

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.02	76.4	0.10	397.2	0.02	94.6	62.3	0.03	0.24	0.14	1.27	0.03	0.30
	I	0.00	19.8	0.03	102.9	0.01	24.5	98.2	0.04	0.39	0.22	2.01	0.05	0.48
	II	0.00	1.8	0.00	9.3	0.00	2.2	25.8	0.01	0.10	0.06	0.53	0.01	0.13

APPENDIX III. CARNATION CREEK CUTTHROAT
JULY 22-24/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2085.5	533.5	372	12	4	18	9.0	12.0	24.0	0.67	0.30	32.7	115.86	29.64	86.22
	I				10	4	17	17.3	8.4	25.0	0.60	8.53	94.1	125.13	32.01	93.12
	II				1	2						33.05	128.3			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.01	34.9	0.03	136.5	0.01	46.9	5.5	0.00	0.02	0.01	0.09	0.00	0.03
	I	0.01	32.3	0.03	126.4	0.01	43.5	142.1	0.07	0.61	0.27	2.38	0.09	0.82
	II													

APPENDIX III. CARNATION CREEK CUTTHROAT
SEPTEMBER 16-18/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
ALL	0	2049.6	444.1	377	23	3	26	0.8	24.7	28.2	0.87	1.33	52.3	77.49	16.79	60.70
	I				14	4	20	5.6	14.8	24.4	0.71	9.16	99.7	104.57	22.66	81.91
	II				6	1	7	0.4	5.9	8.5	0.83	27.90	139.8	284.67	61.68	222.99
	III				1	1						52.66	171.5			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
ALL	0	0.01	52.2	0.06	241.0	0.02	66.7	35.2	0.02	0.15	0.08	0.71	0.02	0.20
	I	0.01	38.7	0.04	178.6	0.01	49.4	179.6	0.09	0.78	0.40	3.61	0.11	1.00
	II	0.00	14.2	0.02	65.6	0.00	18.1	200.9	0.10	0.87	0.45	4.03	0.13	1.12
	III													

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
JUNE 5-8/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	405.0	36.7	70	60	39	171	2787.3	65.8	277.0	0.35	3.33	64.9	2.36	0.21	2.15
III	ALL	319.3	46.9	55	4	2	8	24.0	-1.8	17.8	0.50	9.62	93.7	39.91	5.86	34.05
IV	ALL	399.5	81.9	56	4	4						6.42	81.2			
V	ALL	292.0	41.3	46	3	2	9	180.0	-17.8	35.8	0.33	9.66	93.8	32.44	4.59	27.86
VI	ALL	434.9	99.3	57	5	0	5	0.0	5.0	5.0	1.00	10.74	98.0	86.98	19.86	67.12
VIII	ALL	432.2	204.0	74	12	7	29	214.5	-0.5	58.1	0.42	7.70	87.8	15.01	7.08	7.92
ALL	ALL	2282.9	510.1	358	88	54	228	2399.5	129.8	325.7	0.39	4.84	72.3	10.02	2.24	7.78

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.42	1713.0	4.67	18903.9	0.47	1883.7	570.7	1.41	12.57	15.55	138.71	1.55	13.82
III	ALL	0.03	101.4	0.17	690.3	0.03	118.9	76.9	0.24	2.15	1.64	14.63	0.28	2.52
IV	ALL													
V	ALL	0.03	124.7	0.22	881.9	0.04	145.3	86.9	0.30	2.66	2.10	18.78	0.35	3.09
VI	ALL	0.01	46.5	0.05	203.8	0.01	60.3	53.7	0.12	1.10	0.54	4.82	0.16	1.43
VIII	ALL	0.07	269.7	0.14	571.3	0.13	510.8	221.6	0.51	4.57	1.09	9.69	0.97	8.66
ALL	ALL	0.10	403.8	0.45	1807.0	0.13	518.9	1101.6	0.48	4.30	2.16	19.26	0.62	5.54

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
JULY 25-27/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	342.6	12.8	71	127	84	375	7023.8	207.5	542.7	0.34	2.63	60.6	0.91	0.03	0.88
III	ALL	316.9	20.7	55	6	3	12	36.0	0.0	24.0	0.50	11.20	93.3	26.41	1.73	24.68
IV	ALL	325.2	47.2	58	4	0	4	0.0	4.0	4.0	1.00	3.85	68.0	81.30	11.80	69.50
V	ALL	270.8	23.2	49	3	1	5	2.3	1.5	7.5	0.67	9.89	94.5	60.18	5.16	55.02
VI	ALL	352.4	41.0	55	5	1	6	0.6	4.7	7.8	0.80	7.89	83.2	56.38	6.56	49.82
VIII	ALL	366.1	132.5	74	10	2	13	1.2	10.3	14.7	0.80	8.76	90.7	29.29	10.60	18.69
ALL	ALL	1974.0	277.4	362	155	91	375	2917.2	267.4	483.4	0.41	3.51	64.5	5.26	0.74	4.52

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	1.09	4430.8	29.30	118594.0	1.14	4602.8	985.1	2.88	25.65	76.96	686.46	2.99	26.64
III	ALL	0.04	153.2	0.58	2346.1	0.04	164.0	134.4	0.42	3.78	6.49	57.91	0.45	4.05
IV	ALL	0.01	49.8	0.08	343.0	0.01	58.2	15.4	0.05	0.42	0.33	2.91	0.06	0.49
V	ALL	0.02	67.3	0.19	785.0	0.02	73.6	44.5	0.16	1.47	1.92	17.10	0.18	1.60
VI	ALL	0.02	71.8	0.15	616.9	0.02	81.2	49.3	0.14	1.25	1.20	10.73	0.16	1.41
VIII	ALL	0.03	138.2	0.09	381.8	0.05	216.6	109.5	0.30	2.67	0.83	7.37	0.47	4.18
ALL	ALL	0.19	769.6	1.35	5476.6	0.22	895.4	1315.9	0.67	5.95	4.74	42.31	0.78	6.92

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
SEPT 20-OCT 5/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	507.7	57.2	71	174	76	309	474.0	265.4	352.5	0.56	2.36	60.1	1.64	0.19	1.46
III	ALL	401.3	85.0	55	7	4	16	106.5	-4.3	37.0	0.43	6.25	81.3	24.57	5.20	19.37
IV	ALL	423.5	124.8	58	9	7	41	3969.0	-85.5	166.5	0.22	8.82	87.6	10.46	3.08	7.38
V	ALL	330.4	97.7	49	9	1	10	0.2	9.2	11.0	0.89	6.08	76.1	32.63	9.65	22.98
VI	ALL	435.1	127.8	56	14	5	22	14.2	14.2	29.3	0.64	9.26	91.8	19.98	5.87	14.11
VIII	ALL	453.6	218.9	72	18	5	25	6.5	19.8	30.0	0.72	8.70	90.0	18.20	8.78	9.42
ALL	ALL	2551.6	711.4	361	231	98	401	538.8	354.8	447.6	0.58	3.76	66.6	6.36	1.77	4.59

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.61	2462.6	5.40	21858.0	0.69	2775.3	728.6	1.44	12.80	12.74	113.62	1.62	14.43
III	ALL	0.04	164.7	0.19	777.7	0.05	209.0	102.1	0.25	2.27	1.20	10.72	0.32	2.88
IV	ALL	0.10	387.0	0.32	1313.3	0.14	548.7	357.0	0.84	7.52	2.86	25.52	1.20	10.66
V	ALL	0.03	124.0	0.10	419.4	0.04	176.1	61.6	0.19	1.66	0.63	5.62	0.26	2.36
VI	ALL	0.05	202.6	0.17	689.6	0.07	286.8	201.7	0.46	4.13	1.58	14.08	0.66	5.85
VIII	ALL	0.05	222.4	0.11	460.8	0.11	429.8	216.9	0.48	4.26	0.99	8.84	0.92	8.24
ALL	ALL	0.16	636.3	0.56	2282.4	0.22	882.3	1507.7	0.59	5.27	2.12	18.90	0.82	7.31

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
JUNE 4-13/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	427.8	47.8	71	108	72	324	6480.0	163.0	485.0	0.33	2.87	62.8	1.32	0.15	1.17
III	ALL	361.8	54.3	55	7	2	10	2.8	6.4	13.2	0.71	8.02	88.0	36.92	5.54	31.38
IV	ALL	375.1	66.4	59	10	1	11	0.2	10.3	11.9	0.90	8.13	83.5	33.76	5.98	27.78
V	ALL	233.9	99.4	61	4	3	16	1008.0	-47.5	79.5	0.25	8.47	89.3	14.62	6.21	8.41
VI	ALL	342.4	38.0	79	7	5	25	918.8	-36.1	85.1	0.29	6.61	81.5	13.98	1.55	12.42
VIII	ALL	470.2	197.3	74	12	6	24	72.0	7.0	41.0	0.50	10.04	93.5	19.59	8.22	11.37
ALL	ALL	2211.2	503.2	399	148	89	371	3393.5	254.7	487.8	0.40	4.21	68.8	5.96	1.36	4.60

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.76	3065.0	6.78	27431.6	0.85	3450.6	930.8	2.18	19.41	19.47	173.69	2.45	21.85
III	ALL	0.03	109.6	0.18	730.4	0.03	129.0	78.6	0.22	1.94	1.45	12.91	0.26	2.28
IV	ALL	0.03	119.9	0.17	677.2	0.04	145.7	90.3	0.24	2.15	1.36	12.13	0.29	2.61
V	ALL	0.07	276.8	0.16	651.4	0.12	481.4	135.6	0.58	5.17	1.36	12.17	1.01	8.99
VI	ALL	0.07	289.6	0.64	2609.3	0.08	325.7	162.0	0.47	4.22	4.26	38.04	0.53	4.75
VIII	ALL	0.05	206.6	0.12	492.3	0.09	355.9	241.0	0.51	4.57	1.22	10.90	0.88	7.88
ALL	ALL	0.17	679.5	0.74	2985.8	0.22	879.7	1563.6	0.71	6.31	3.11	27.72	0.92	8.17

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
JULY 24-26/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	480.2	35.0	67	85	28	127	60.6	111.2	142.3	0.67	3.17	67.0	3.79	0.28	3.51
III	ALL	384.1	70.4	55	5	0	5	0.0	5.0	5.0	1.00	4.79	76.2	76.82	14.08	62.74
IV	ALL	369.4	73.7	53	5	2	8	8.6	2.5	14.2	0.60	6.70	84.1	44.33	8.84	35.48
V	ALL	208.0	88.4	57	10	5	20	60.0	4.5	35.5	0.50	7.15	83.6	10.40	4.42	5.98
VI	ALL	328.1	1.6	76	7	5	25	918.8	-36.1	85.1	0.29	5.17	74.2	13.39	0.07	13.33
VIII	ALL	499.3	151.0	76	12	5	21	25.5	10.5	30.7	0.58	7.48	84.9	24.27	7.34	16.93
ALL	ALL	2269.1	420.1	384	124	45	195	135.1	171.4	217.9	0.64	4.30	71.8	11.66	2.16	9.50

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.26	1068.3	3.62	14656.4	0.28	1152.2	402.2	0.84	7.47	11.49	102.51	0.90	8.06
III	ALL	0.01	52.7	0.07	287.4	0.02	64.5	24.0	0.06	0.56	0.34	3.04	0.08	0.68
IV	ALL	0.02	91.3	0.11	457.6	0.03	114.1	55.9	0.15	1.35	0.76	6.76	0.19	1.69
V	ALL	0.10	389.1	0.23	915.6	0.17	676.8	143.0	0.69	6.13	1.62	14.43	1.20	10.66
VI	ALL	0.07	302.2	15.31	61969.7	0.08	303.7	126.7	0.39	3.44	79.17	706.21	0.39	3.46
VIII	ALL	0.04	166.7	0.14	551.3	0.06	239.0	153.9	0.31	2.75	1.02	9.09	0.44	3.94
ALL	ALL	0.09	347.1	0.46	1875.0	0.11	426.0	836.0	0.37	3.29	1.99	17.75	0.45	4.03

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
SEPTEMBER 18-20/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	414.5	38.5	70	71	37	148	557.7	101.0	195.5	0.48	3.87	71.7	2.80	0.26	2.54
III	ALL	394.5	84.3	55	3	1	5	2.3	1.5	7.5	0.67	7.39	87.7	87.67	18.73	68.93
IV	ALL	434.0	66.7	59	8	2	11	2.0	7.9	13.5	0.75	5.75	80.9	40.69	6.25	34.43
V	ALL	230.9	59.7	58	5	8						7.73	86.8			
VI	ALL	368.4	23.7	77	7	3	12	17.2	3.9	20.6	0.57	6.56	83.5	30.07	1.93	28.14
VIII	ALL	429.2	164.0	72	11	7	30	416.9	-10.6	71.1	0.36	6.34	82.8	14.19	5.42	8.77
ALL	ALL	2271.5	436.9	391	105	58	235	1238.9	164.2	305.0	0.45	4.82	75.8	9.68	1.86	7.82

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.36	1447.6	3.85	15585.1	0.39	1595.8	573.3	1.38	12.34	14.89	132.82	1.52	13.60
III	ALL	0.01	46.2	0.05	216.0	0.01	58.7	33.2	0.08	0.75	0.39	3.52	0.11	0.96
IV	ALL	0.02	99.5	0.16	647.2	0.03	117.5	61.3	0.14	1.26	0.92	8.20	0.17	1.49
V	ALL													
VI	ALL	0.03	134.6	0.52	2091.8	0.04	143.8	80.4	0.22	1.95	3.39	30.25	0.23	2.08
VIII	ALL	0.07	285.2	0.18	746.5	0.11	461.6	191.8	0.45	3.99	1.17	10.43	0.72	6.45
ALL	ALL	0.10	417.9	0.54	2172.9	0.13	517.5	1129.5	0.50	4.44	2.59	23.06	0.62	5.49

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
JULY 22-24/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	412.2	27.6	65	62	35	142	859.5	83.7	201.0	0.44	3.15	66.8	2.90	0.19	2.70
III	ALL	320.2	110.8	55	13	5	21	18.6	12.5	29.7	0.62	3.70	70.4	15.16	5.24	9.91
IV	ALL	328.8	120.5	54	14	3	18	2.0	15.0	20.7	0.79	2.83	65.2	18.45	6.76	11.69
V	ALL	230.0	42.4	55	8	4	16	48.0	2.1	29.9	0.50	3.34	65.7	14.38	2.65	11.73
VI	ALL	386.8	98.9	75	11	11						5.67	74.9			
VIII	ALL	407.5	133.3	68	20	18	200	307800.0	-909.6	1309.6	0.10	5.21	72.5	2.04	0.67	1.37
ALL	ALL	2085.5	533.5	372	128	76	315	2640.4	212.3	417.8	0.41	3.84	68.9	6.62	1.69	4.93

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.35	1397.8	5.16	20875.8	0.37	1498.1	449.1	1.09	9.72	16.27	145.16	1.17	10.42
III	ALL	0.07	267.0	0.19	771.6	0.10	408.3	78.2	0.24	2.18	0.71	6.30	0.37	3.33
IV	ALL	0.05	219.3	0.15	598.4	0.09	346.2	50.5	0.15	1.37	0.42	3.74	0.24	2.16
V	ALL	0.07	281.5	0.38	1527.2	0.09	345.2	53.5	0.23	2.07	1.26	11.25	0.29	2.54
VI	ALL													
VIII	ALL	0.49	1986.3	1.50	6072.0	0.73	2951.9	1041.6	2.56	22.80	7.81	69.70	3.80	33.88
ALL	ALL	0.15	611.4	0.59	2390.1	0.20	821.6	1210.3	0.58	5.18	2.27	20.24	0.78	6.96

APPENDIX IV. CARNATION CREEK COTTUS ALEUTICUS
SEPTEMBER 16-18/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	419.5	14.3	68	65	20	94	35.0	82.1	105.7	0.69	3.96	69.8	4.47	0.15	4.32
III	ALL	308.0	53.4	55	12	3	16	3.0	12.6	19.4	0.75	5.44	77.5	19.25	3.34	15.91
IV	ALL	335.1	115.0	57	10	5	20	60.0	4.5	35.5	0.50	5.47	78.4	16.75	5.75	11.01
V	ALL	232.0	80.8	54	18	4	23	3.0	19.7	26.6	0.78	8.15	83.1	10.02	3.49	6.53
VI	ALL	362.9	74.8	75	11	7	30	416.9	-10.6	71.1	0.36	8.91	86.8	12.00	2.47	9.52
VIII	ALL	392.1	105.8	68	23	14	59	584.7	10.4	107.1	0.39	5.47	74.0	6.67	1.80	4.87
ALL	ALL	2049.6	444.1	377	139	53	225	190.5	197.1	252.3	0.62	5.43	75.0	9.12	1.98	7.15

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.22	905.8	6.57	26571.2	0.23	937.7	372.0	0.89	7.91	26.01	232.03	0.92	8.19
III	ALL	0.05	210.2	0.30	1212.6	0.06	254.3	87.0	0.28	2.52	1.63	14.54	0.34	3.05
IV	ALL	0.06	241.5	0.17	703.8	0.09	367.7	109.4	0.33	2.91	0.95	8.49	0.50	4.43
V	ALL	0.10	403.7	0.29	1159.1	0.15	619.4	188.5	0.81	7.25	2.33	20.81	1.25	11.12
VI	ALL	0.08	337.3	0.40	1636.7	0.10	424.9	269.5	0.74	6.62	3.60	32.14	0.94	8.34
VIII	ALL	0.15	606.7	0.56	2248.3	0.21	830.9	321.5	0.82	7.31	3.04	27.11	1.12	10.02
ALL	ALL	0.11	443.6	0.51	2047.3	0.14	566.3	1219.7	0.60	5.31	2.75	24.50	0.76	6.78

APPENDIX V. CARNATION CREEK COTTUS ASPER
JUNE 8/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	405.0	36.7	70	11	8	40	1816.5	-44.9	125.6	0.27	6.10	82.0	10.04	0.91	9.13

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.10	403.0	1.10	4447.7	0.11	443.2	245.9	0.61	5.42	6.70	59.77	0.67	5.96

APPENDIX V. CARNATION CREEK COTTUS ASPER
JULY 25/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	342.6	12.8	71	6	9						7.00	82.3			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL													

APPENDIX V. CARNATION CREEK COTTUS ASPER
OCTOBER 5/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	507.7	57.2	71	6	4	18	360.0	-19.9	55.9	0.33	7.76	88.6	28.21	3.18	25.03

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.04	143.5	0.31	1273.5	0.04	161.7	139.7	0.28	2.45	2.44	21.79	0.31	2.77

APPENDIX V. CARNATION CREEK COTTUS ASPER
JUNE 4/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	427.8	47.8	71	8	5	21	256.8	-10.7	53.4	0.38	9.24	90.2	20.05	2.24	17.81

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.05	201.8	0.45	1806.2	0.06	227.2	197.1	0.46	4.11	4.12	36.79	0.52	4.63

APPENDIX V. CARNATION CREEK COTTUS ASPER
JULY 24/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	480.2	35.0	67	16	2	18	0.5	16.9	19.7	0.88	7.76	87.5	26.26	1.91	24.35

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.04	154.1	0.52	2114.4	0.04	166.2	141.9	0.30	2.64	4.05	36.16	0.32	2.84

APPENDIX V. CARNATION CREEK COTTUS ASPER
SEPTEMBER 20/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	414.5	38.5	70	9	7	41	3969.0	-85.5	166.5	0.22	8.59	90.3	10.23	0.95	9.28

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.10	395.4	1.05	4257.2	0.11	435.9	347.8	0.84	7.48	9.03	80.58	0.92	8.25

APPENDIX V. CARNATION CREEK COTTUS ASPER
JULY 22/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	412.2	27.6	65	21	4	26	2.1	23.0	28.8	0.81	7.91	86.8	15.89	1.06	14.8

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.06	254.7	0.94	3803.8	0.07	273.0	205.2	0.50	4.44	7.43	66.32	0.53	4.7

APPENDIX V. CARNATION CREEK COTTUS ASPER
SEPTEMBER 16/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
II	ALL	419.5	14.3	68	14	5	22	14.2	14.2	29.3	0.64	9.85	94.5	19.26	0.66	18.61

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
II	ALL	0.05	210.1	1.52	6163.3	0.05	217.5	214.4	0.51	4.56	14.99	133.75	0.53	4.72

APPENDIX VI. UPPER CARNATION CREEK(IX)
JUNE 6/78

CUTTHROAT

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
IX	I	226.5	50.7	75	12	5	21	25.5	10.5	30.7	0.58	3.43	62.9	11.01	2.46	8.55
	II				11	8	40	1816.5	-44.9	125.6	0.27	12.28	95.8	5.62	1.26	4.36

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
IX	I	0.09	367.6	0.41	1642.1	0.12	473.6	70.5	0.31	2.78	1.39	12.41	0.40	3.58
	II	0.18	720.7	0.80	3219.5	0.23	928.5	495.5	2.19	19.51	9.77	87.17	2.82	25.14

APPENDIX VI. UPPER CARNATION CREEK(IX) CUTTHROAT
SEPTEMBER 19/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
IX	0	270.7	75.8	74	11	4	17	12.1	10.3	24.2	0.64	0.88	44.7	15.66	4.39	11.28
	I				8	4	16	48.0	2.1	29.9	0.50	7.17	88.8	16.92	4.74	12.18
	II				3	1	5	2.3	1.5	7.5	0.67	15.93	117.7	60.16	16.84	43.31

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
IX	0	0.06	258.4	0.23	922.9	0.09	358.9	15.1	0.06	0.50	0.20	1.78	0.08	0.69
	I	0.06	239.2	0.21	854.2	0.08	332.2	114.7	0.42	3.78	1.51	13.50	0.59	5.25
	II	0.02	67.3	0.06	240.3	0.02	93.4	71.7	0.26	2.36	0.95	8.44	0.37	3.28

APPENDIX VI. UPPER CARNATION CREEK(IX) CUTTHROAT
JUNE 14/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
IX	I	286.8	72.3	73	20	7	31	18.5	22.2	39.4	0.65	2.95	65.8	9.32	2.35	6.97
	II				15	6	25	25.9	14.8	35.2	0.60	9.48	98.9	11.47	2.89	8.58
	III				5	0	5	0.0	5.0	5.0	1.00	20.35	131.2	57.36	14.46	42.90

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
IX	I	0.11	434.2	0.43	1722.3	0.14	580.5	90.8	0.32	2.82	1.26	11.20	0.42	3.77
	II	0.09	352.8	0.35	1399.4	0.12	471.7	237.1	0.83	7.37	3.28	29.25	1.11	9.86
	III	0.02	70.6	0.07	279.9	0.02	94.3	101.8	0.35	3.16	1.41	12.55	0.47	4.23

APPENDIX VI. UPPER CARNATION CREEK(IX) CUTTHROAT
OCTOBER 10/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
IX	0	205.4	103.4	72	23	14	59	584.7	10.4	107.1	0.39	1.08	48.8	3.49	1.76	1.74
	I				24	7	34	10.5	27.4	40.4	0.71	6.69	88.0	6.06	3.05	3.01
	II				6	0	6	0.0	6.0	6.0	1.00	20.06	131.0	34.23	17.23	17.00
	III				1	0	1	0.0	1.0	1.0	1.00	32.07	157.0	205.40	103.40	102.00

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
IX	0	0.29	1158.1	0.57	2300.5	0.58	2332.1	63.5	0.31	2.76	0.61	5.48	0.62	5.55
	I	0.16	667.6	0.33	1326.1	0.33	1344.3	226.6	1.10	9.84	2.19	19.55	2.22	19.82
	II	0.03	118.2	0.06	234.8	0.06	238.1	120.3	0.59	5.23	1.16	10.38	1.18	10.52
	III	0.00	19.7	0.01	39.1	0.01	39.7	32.1	0.16	1.39	0.31	2.77	0.31	2.80

APPENDIX VI. UPPER CARNATION CREEK(IX) CUTTHROAT
SEPTEMBER 24/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
IX	0	298.6	100.5	78	28	7	37	6.9	32.1	42.6	0.75	1.02	46.0	8.00	2.68	5.31
	I				21	7	32	15.7	23.6	39.4	0.67	7.20	88.1	9.48	3.19	6.29
	II				7	3	12	17.2	3.9	20.6	0.57	20.32	126.8	24.38	8.20	16.17

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
IX	0	0.13	506.0	0.37	1503.4	0.18	762.7	37.9	0.13	1.13	0.38	3.37	0.19	1.71
	I	0.11	426.9	0.31	1268.5	0.16	643.5	226.8	0.76	6.77	2.26	20.13	1.14	10.21
	II	0.04	166.0	0.12	493.3	0.06	250.3	248.9	0.83	7.44	2.48	22.09	1.26	11.21

APPENDIX VII. CARNATION CREEK TRIBUTARY C CUTTHROAT
JUNE 6/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	POOL P
I	I	97.6	61.5	48	23	8	35	20.7	26.2	44.4	0.65	3.01	60.5	2.77	1.74	.02 1.92
	II				13	4	19	7.0	13.5	24.1	0.69	10.66	89.9	5.20	3.28	1

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL B/ ACRE
I	I	0.36	1462.3	0.57	2320.7	0.98	3953.6	106.2	1.09	9.71	1.73	15.41	2.94	.24 28.47
	II	0.19	778.6	0.31	1235.7	0.52	2105.1	200.2	2.05	18.30	3.26	29.04	5.55	49

APPENDIX VII. CARNATION CREEK TRIBUTARY C CUTTHROAT
OCTOBER 6/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	103.1	0.0	47	9	5	20	110.7	-0.8	41.3	0.44	1.56	53.8	5.09	0.00	5.09
	I				25	6	33	5.4	28.3	37.5	0.76	6.71	86.6	3.13	0.00	3.13
	II				3	1	5	2.3	1.5	7.5	0.67	27.32	136.5	22.91	0.00	22.91

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.20	794.9	0.00	0.0	0.20	794.9	31.5	0.31	2.72	0.00	0.00	0.31	2.72
	I	0.32	1291.2	0.00	0.0	0.32	1291.2	220.6	2.14	19.08	0.00	0.00	2.14	19.08
	II	0.04	176.6	0.00	0.0	0.04	176.6	122.9	1.19	10.64	0.00	0.00	1.19	10.64

APPENDIX VII. CARNATION CREEK TRIBUTARY C CUTTHROAT
JUNE 11/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	I	93.8	73.7	50	11	2	13	1.0	11.5	15.4	0.82	5.04	76.7	6.98	5.48	1.50
	II				5	0	5	0.0	5.0	5.0	1.00	11.25	101.2	18.76	14.74	4.02

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	I	0.14	580.1	0.18	738.3	0.67	2706.9	67.8	0.72	6.45	0.92	8.21	3.37	30.09
	II	0.05	215.7	0.07	274.6	0.25	1006.7	56.3	0.60	5.35	0.76	6.81	2.80	24.96

APPENDIX VII. CARNATION CREEK TRIBUTARY C CUTTHROAT
SEPTEMBER 17/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	87.3	65.0	50	1	2						2.20	59.3			
	I				8	2	11	2.0	7.9	13.5	0.75	8.58	92.2	8.18	6.09	2.09
	II				3	1	5	2.3	1.5	7.5	0.67	19.53	122.0	19.40	14.44	4.96

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0													
	I	0.12	494.5	0.16	664.1	0.48	1935.8	91.5	1.05	9.35	1.41	12.56	4.10	36.61
	II	0.05	208.6	0.07	280.2	0.20	816.7	87.9	1.01	8.98	1.35	12.06	3.94	35.16

APPENDIX VII. CARNATION CREEK TRIBUTARY C CUTTHROAT
SEPTEMBER 15/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	85.2	61.7	46	18	3	22	1.2	19.4	23.8	0.83	2.57	62.4	3.94	2.86	1.09
	I				3	1	5	2.3	1.5	7.5	0.67	12.38	105.0	18.93	13.71	5.22
	II				3	0	3	0.0	3.0	3.0	1.00	19.01	121.0	28.40	20.57	7.83

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.25	1026.0	0.35	1416.8	0.92	3719.8	55.6	0.65	5.82	0.90	8.03	2.36	21.09
	I	0.05	213.8	0.07	295.2	0.19	775.0	55.7	0.65	5.83	0.90	8.06	2.37	21.15
	II	0.04	142.5	0.05	196.8	0.13	516.6	57.0	0.67	5.97	0.92	8.24	2.43	21.64

APPENDIX VIII USELESS CREEK COHO
AUGUST 30/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	203.3	105.1	49	22	3	25	0.8	23.6	27.3	0.86	2.87	60.9	7.98	4.13	3.85

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.13	507.1	0.24	980.9	0.26	1049.8	65.4	0.32	2.87	0.62	5.55	0.67	5.94

APPENDIX VIII USELESS CREEK COHO
AUGUST 16/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	185.5	97.0	55	56	12	71	8.2	65.5	77.0	0.79	2.32	58.7	2.60	1.36	1.24

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.38	1554.9	0.73	2973.6	0.81	3259.2	165.3	0.89	7.95	1.70	15.20	1.87	16.66

APPENDIX VIII USELESS CREEK COHO
AUGUST 19/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	210.5	108.6	48	40	18	73	128.4	50.1	95.4	0.55	2.04	55.9	2.89	1.45	1.44

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.35	1398.2	0.69	2787.2	0.69	2805.8	148.6	0.71	6.30	1.41	12.55	1.42	12.64

APPENDIX VIII USELESS CREEK CUTTHROAT
AUGUST 30/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	203.3	105.1	49	4	1	5	1.0	3.3	7.3	0.75	0.79	44.2	38.12	19.71	18.41
	I				9	2	12	1.5	9.1	14.0	0.78	6.61	88.8	17.57	9.08	8.49
	II				2	1	4	12.0	-2.9	10.9	0.50	19.88	128.3	50.83	26.27	24.55

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.03	106.2	0.05	205.4	0.05	219.8	4.2	0.02	0.19	0.04	0.36	0.04	0.38
	I	0.06	230.3	0.11	445.6	0.12	476.9	76.4	0.38	3.38	0.73	6.49	0.78	6.94
	II	0.02	79.6	0.04	154.0	0.04	164.8	79.5	0.39	3.49	0.76	6.75	0.81	7.22

APPENDIXVIIILUSELESS CREEK CUTTHROAT
AUGUST 16/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	185.5	97.0	55	20	2	22	0.3	21.1	23.4	0.90	0.90	45.0	8.35	4.36	3.98
	I				3	0	3	0.0	3.0	3.0	1.00	7.13	86.7	61.83	32.33	29.50
	II				1	0	1	0.0	1.0	1.0	1.00	10.15	102.0	185.50	97.00	88.50

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.12	484.8	0.23	927.1	0.25	1016.2	20.1	0.11	0.97	0.21	1.85	0.23	2.02
	I	0.02	65.5	0.03	125.2	0.03	137.2	21.4	0.12	1.03	0.22	1.97	0.24	2.15
	II	0.01	21.8	0.01	41.7	0.01	45.7	10.2	0.05	0.49	0.10	0.93	0.11	1.02

APPENDIX VIII USELESS CREEK CUTTHROAT
AUGUST 19/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	210.5	105.6	48	4	3	16	1008.0	-47.5	79.5	0.25	0.65	41.0	13.16	6.60	6.56
	I				14	1	15	0.1	14.4	15.7	0.93	6.38	85.6	13.96	7.00	6.96
	II				2	0	2	0.0	2.0	2.0	1.00	16.62	118.0	105.25	52.80	52.45

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.08	307.6	0.15	613.2	0.15	617.3	10.4	0.05	0.44	0.10	0.88	0.10	0.89
	I	0.07	289.9	0.14	577.8	0.14	581.7	96.2	0.46	4.08	0.91	8.13	0.92	8.18
	II	0.01	38.5	0.02	76.6	0.02	77.2	33.2	0.16	1.41	0.31	2.81	0.32	2.83

APPENDIX VIII USELESS CREEK COTTUS ALEUTICUS
AUGUST 30/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	203.3	105.1	49	72	37	148	515.5	102.7	193.5	0.49	4.03	68.4	1.37	0.71	0.66

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.73	2948.4	1.41	5703.3	1.51	6104.1	597.0	2.94	26.19	5.68	50.67	6.08	54.23

APPENDIX VIII USELESS CREEK COTTUS ALUTICUS
AUGUST 16/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	185.5	97.0	55	88	35	146	147.9	121.8	170.4	0.60	3.50	65.9	1.27	0.66	0.61

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.79	3187.7	1.51	6096.1	1.65	6681.6	511.0	2.75	24.57	5.27	46.99	5.77	51.50

APPENDIX VIII USELESS CREEK COTTUS ALEUTICUS
AUGUST 19/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	210.5	105.6	48	19	20						3.27	64.5			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL													

APPENDIX VIII USELESS CREEK COTTUS ASPER
AUGUST 19/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	210.5	105.6	48	7	0	7	0.0	7.0	7.0	1.00	4.65	73.4	30.07	15.09	14.99

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.03	134.6	0.07	268.3	0.07	270.1	32.6	0.15	1.38	0.31	2.75	0.31	2.77

APPENDIX IX, FREDERICKS CREEK COHO
AUGUST 14/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	445.2	27.9	50	120	38	176	72.7	158.6	192.7	0.68	3.12	64.1	2.54	0.16	2.38

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.39	1596.3	6.29	25472.9	0.42	1703.1	548.4	1.23	10.99	19.66	175.33	1.31	11.72

APPENDIX IX. FREDERICKS CREEK RAINBOW
AUGUST 14/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	445.2	27.9	50	19	6	28	11.4	21.0	34.5	0.68	1.34	52.2	16.03	1.00	15.03

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.06	252.4	1.00	4028.0	0.07	269.3	37.3	0.08	0.75	1.34	11.91	0.09	0.80

APPENDIX IX. FREDERICKS CREEK COTTUS ALUTICUS
AUGUST 14/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	445.2	27.9	50	866	193	1114	144.2	1090.3	1138.4	0.78	0.28	30.9	0.40	0.03	0.37

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	2.50	10129.8	39.94	161640.0	2.67	10807.0	312.8	0.70	6.27	11.21	99.99	0.75	6.69

APPENDIX IX. FREDERICKS CREEK COTTUS ASPER
AUGUST 14/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	445.2	27.9	50	32	11	49	27.4	38.3	59.2	0.66	5.88	77.3	9.13	0.57	8.56

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.11	443.3	1.75	7073.1	0.12	472.9	287.0	0.64	5.75	10.29	91.74	0.69	6.13

APPENDIX X. SOUTH PACHENA COHO
SEPTEMBER 19/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	375.5	67.6	64	130	7	137	0.5	136.0	138.8	0.95	2.36	59.9	2.73	0.49	2.24
	I				7	0	7	0.0	7.0	7.0	1.00	9.23	95.6	53.64	9.66	43.99

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.37	1480.8	2.03	8225.6	0.45	1805.9	324.3	0.86	7.70	4.80	42.79	1.05	9.39
	I	0.02	75.4	0.10	419.1	0.02	92.0	64.6	0.17	1.54	0.96	8.53	0.21	1.87

APPENDIX X. SOUTH PACHENA COHO
AUGUST 15/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	371.1	23.8	63	419	45	469	8.4	463.6	475.2	0.89	1.26	48.5	0.79	0.05	0.74
	I				18	2	20	0.4	19.0	21.5	0.89	7.99	88.8	18.33	1.18	17.15

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	1.26	5119.2	19.72	79820.2	1.35	5470.0	590.7	1.59	14.20	24.82	221.37	1.70	15.17
	I	0.05	220.8	0.85	3443.4	0.06	236.0	161.8	0.44	3.89	6.80	60.65	0.47	4.16

APPENDIX X. SOUTH PACHENA COHO
AUGUST 20/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	343.6	37.2	62	287	43	338	14.2	330.0	345.1	0.85	1.72	52.9	1.02	0.11	0.91
	I				14	3	18	2.0	15.0	20.7	0.79	7.47	86.8	19.28	2.09	17.20

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.98	3976.1	9.07	36725.2	1.10	4458.8	580.4	1.69	15.07	15.60	139.17	1.89	16.90
	I	0.05	209.9	0.48	1938.4	0.06	235.3	133.1	0.39	3.46	3.58	31.93	0.43	3.88

APPENDIX X. SOUTH PACHENA RAINBOW
SEPTEMBER 19/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	375.5	67.6	64	48	3	51	0.3	50.2	52.2	0.94	1.43	52.6	7.33	1.32	6.01
	I				2	0	2	0.0	2.0	2.0	1.00	13.29	107.0	187.75	33.80	153.95

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.14	551.8	0.76	3065.2	0.17	673.0	73.0	0.19	1.73	1.08	9.63	0.24	2.12
	I	0.01	21.6	0.03	119.7	0.01	26.3	26.6	0.07	0.63	0.39	3.51	0.09	0.77

APPENDIX X. SOUTH PACHENA RAINBOW
AUGUST 15/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	371.1	23.8	63	84	13	99	4.6	95.1	103.6	0.85	1.15	48.3	3.73	0.24	3.49
	I				7	0	7	0.0	7.0	7.0	1.00	7.71	90.4	53.01	3.40	49.61

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.27	1083.8	4.18	16898.8	0.29	1158.1	114.3	0.31	2.75	4.80	42.82	0.33	2.93
	I	0.02	76.3	0.29	1190.3	0.02	81.6	54.0	0.15	1.30	2.27	20.22	0.16	1.39

APPENDIX X. SOUTH PACHENA RAINBOW
AUGUST 20/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	343.6	37.2	62	45	16	70	44.7	56.5	83.2	0.64	1.08	46.3	4.92	0.53	4.39
	I				10	1	11	0.2	10.3	11.9	0.90	12.94	107.5	30.92	3.35	27.58
	II				0	1						30.00	144.0			
	IV				0	1						108.04	221.0			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.20	822.4	1.88	7596.6	0.23	922.3	75.1	0.22	1.95	2.02	18.00	0.25	2.19
	I	0.03	130.9	0.30	1208.8	0.04	146.8	143.8	0.42	3.73	3.87	34.48	0.47	4.19
	II													
	IV													

APPENDIX X. SOUTH PACHENA COTTUS ALEUTICUS
SEPTEMBER 19/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	375.5	67.6	64	80	32	133	138.3	109.8	156.9	0.60	3.38	66.4	2.82	0.51	2.31

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.36	1437.0	1.97	7982.2	0.43	1752.5	451.2	1.20	10.72	6.67	59.54	1.47	13.07

APPENDIX X. SOUTH PACHENA COTTUS ALEUTICUS
AUGUST 15/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	371.1	23.8	63	26	28						3.31	66.2			

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL													

APPENDIX X. SOUTH PACHENA COTTUS ALEUTICUS
AUGUST 20/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	343.6	37.2	62	32	13	54	59.8	38.4	69.4	0.59	3.51	64.8	6.38	0.69	5.69

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE.	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.16	634.8	1.45	5863.2	0.18	711.9	189.4	0.55	4.92	5.09	45.41	0.62	5.51

APPENDIX X. SOUTH PACHENA COTTUS ASPER
SEPTEMBER 19/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	375.5	67.6	64	50	23	93	181.7	65.6	119.5	0.54	10.52	92.1	4.06	0.73	3.33

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.25	997.9	1.37	5543.2	0.30	1217.0	974.5	2.60	23.15	14.42	128.59	3.16	28.23

APPENDIX X. SOUTH PACHENA COTTUS ASPER
AUGUST 15/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	371.1	23.8	63	53	18	80	43.1	67.1	93.4	0.66	8.89	89.7	4.62	0.30	4.33

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.22	875.2	3.37	13647.1	0.23	935.2	713.3	1.92	17.14	29.97	267.32	2.05	18.32

APPENDIX X. SOUTH PACHENA COTTUS ASPER
AUGUST 20/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	ALL	343.6	37.2	62	61	20	91	42.7	77.7	103.8	0.67	6.90	80.2	3.79	0.41	3.38

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	ALL	0.26	1068.9	2.44	9873.4	0.30	1198.7	626.0	1.82	16.25	16.83	150.11	2.04	18.23

APPENDIX XI. RITHERDON CREEK CUTTHROAT
AUGUST 30/78

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	294.0	57.6	58	13	3	17	2.4	13.8	20.0	0.77	1.92	56.0	17.40	3.41	13.99
	I				9	3	14	6.8	8.3	18.7	0.67	9.21	98.8	21.78	4.27	17.51
	II				1	2						21.60	129.0			
	III				1	0	1	0.0	1.0	1.0	1.00	51.05	171.0	294.00	57.60	236.40

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.06	232.6	0.29	1187.4	0.07	289.3	32.5	0.11	0.99	0.56	5.04	0.14	1.23
	I	0.05	185.8	0.23	948.5	0.06	231.1	124.3	0.42	3.77	2.16	19.25	0.53	4.69
	II													
	III	0.00	13.8	0.02	70.3	0.00	17.1	51.1	0.17	1.55	0.89	7.91	0.22	1.93

APPENDIX XI. RITHERDON CREEK CUTTHROAT
AUGUST 13/79

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	199.7	15.0	46	22	0	22	0.0	22.0	22.0	1.00	1.45	52.9	9.08	0.68	8.40
	I				2	2						11.55	107.0			
	II				4	2	8	24.0	-1.8	17.8	0.50	20.11	126.8	24.96	1.88	23.09
	III				2	0	2	0.0	2.0	2.0	1.00	62.26	185.0	99.85	7.50	92.35

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0	0.11	445.8	1.47	5935.6	0.12	482.0	31.8	0.16	1.42	2.12	18.83	0.17	1.54
	I													
	II	0.04	162.1	0.53	2158.4	0.04	175.3	160.9	0.81	7.18	10.72	95.65	0.87	7.77
	III	0.01	40.5	0.13	539.6	0.01	43.8	124.5	0.62	5.56	8.30	74.05	0.67	6.01

APPENDIX XI. RITHERDON CREEK CUTTHROAT
AUGUST 21/80

SECTION	AGE	AREA (SQ.M) WETTED	AREA (SQ.M) RIFFLE	SECT. LEN (M)	C1	C2	POP. N	VAR. N	95 PERCENT CONF. LIMITS LOWER	95 PERCENT CONF. LIMITS UPPER	P	MEAN WEIGHT (GM)	MEAN LENGTH (MM)	AREA/FISH (SQ.M) WETTED	AREA/FISH (SQ.M) RIFFLE	AREA/FISH (SQ.M) POOL
I	0	288.8	18.9	57	14	15						1.75	54.5			
	I				7	2	10	2.8	6.4	13.2	0.71	12.41	106.8	29.47	1.93	27.54
	II				1	0	1	0.0	1.0	1.0	1.00	46.97	168.0	288.80	18.90	269.90
	III				1	0	1	0.0	1.0	1.0	1.00	75.62	200.0	288.80	18.90	269.90

SECTION	AGE	WETTED FISH/ SQ. M	WETTED FISH/ ACRE	RIFFLE FISH/ SQ. M	RIFFLE FISH/ ACRE	POOL FISH/ SQ. M	POOL FISH/ ACRE	WETTED TOTAL WT (GM)	WETTED GM/ SQ. M	WETTED LB/ ACRE	RIFFLE GM/ SQ. M	RIFFLE LB/ ACRE	POOL GM/ SQ. M	POOL LB/ ACRE
I	0													
	I	0.03	137.3	0.52	2098.4	0.04	146.9	121.6	0.42	3.76	6.43	57.39	0.45	4.02
	II	0.00	14.0	0.05	214.1	0.00	15.0	47.0	0.16	1.45	2.49	22.17	0.17	1.55
	III	0.00	14.0	0.05	214.1	0.00	15.0	75.6	0.26	2.34	4.00	35.69	0.28	2.50

APPENDIX XII. LENGTH DATA FOR CARNATION CREEK AND OTHER AREA STREAMS

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	78	2403	FENC	TR	CHUM	0	76	42.145	1.937	0.222	3.874	3.752	41.703	42.587	38	45
LOGG	CARN	78	0104	FENC	TR	CHUM	0	50	40.500	0.886	0.125	1.773	0.786	40.248	40.752	39	43
LOGG	CARN	78	1004	FENC	TR	CHUM	0	50	41.960	1.068	0.151	2.137	1.141	41.656	42.264	40	44
LOGG	CARN	78	2004	FENC	TR	CHUM	0	33	41.909	0.914	0.159	1.828	0.835	41.586	42.232	40	44
LOGG	CARN	78	3004	FENC	TR	CHUM	0	50	42.540	0.788	0.111	1.576	0.621	42.316	42.764	41	44
LOGG	CARN	78	2403	FENC	TR	COHO	0	88	39.102	0.959	0.102	1.919	0.920	38.899	39.306	37	44
LOGG	CARN	78	0104	FENC	TR	COHO	0	69	36.812	1.102	0.133	2.204	1.214	36.548	37.076	34	39
LOGG	CARN	78	1004	FENC	TR	COHO	0	50	35.620	1.123	0.159	2.246	1.261	35.301	35.939	33	39
LOGG	CARN	78	2004	FENC	TR	COHO	0	18	36.333	0.970	0.229	1.940	0.941	35.851	36.816	34	38
LOGG	CARN	78	3004	FENC	TR	COHO	0	66	39.015	1.246	0.153	2.493	1.554	38.710	39.320	35	42
LOGG	CARN	78	1105	FENC	TR	COHO	0	71	38.676	1.381	0.164	2.762	1.908	38.350	39.002	37	46
LOGG	CARN	78	2905	FENC	TR	COHO	0	51	40.353	2.985	0.418	5.971	8.913	39.513	41.193	34	49
LOGG	CARN	78	1006	FENC	TR	COHO	0	69	42.275	3.429	0.413	6.859	11.761	41.454	43.097	34	52
LOGG	CARN	78	1306	FENC	TR	COHO	0	117	42.308	3.302	0.305	6.604	10.905	41.703	42.912	35	52
LOGG	CARN	78	2406	FENC	TR	COHO	0	30	46.767	2.849	0.520	5.698	8.116	45.706	47.828	42	53
LOGG	CARN	78	1508	FENC	TR	COHO	0	170	48.506	3.427	0.263	6.853	11.743	47.986	49.026	40	58
LOGG	CARN	78	2203	FENC	TR	COHO	1	127	74.559	6.389	0.567	12.778	40.820	73.437	75.682	61	86
LOGG	CARN	78	2203	FENC	TR	COHO	2	36	85.556	8.984	1.497	17.968	80.711	82.516	88.595	70	117
LOGG	CARN	78	2903	FENC	TR	COHO	1	289	72.993	6.377	0.375	12.754	40.667	72.250	73.736	60	86
LOGG	CARN	78	2903	FENC	TR	COHO	2	66	86.000	8.624	1.062	17.248	74.369	83.888	88.112	70	107
LOGG	CARN	78	0504	FENC	TR	COHO	1	285	73.839	7.096	0.420	14.192	50.354	73.006	74.671	60	95
LOGG	CARN	78	0504	FENC	TR	COHO	2	63	91.825	9.126	1.150	18.251	83.275	89.537	94.113	77	111
LOGG	CARN	78	1204	FENC	TR	COHO	1	87	75.552	8.124	0.871	16.247	65.994	73.819	77.285	61	96
LOGG	CARN	78	1204	FENC	TR	COHO	2	27	94.185	7.631	1.469	15.262	58.234	91.160	97.211	80	108
LOGG	CARN	78	1904	FENC	TR	COHO	1	351	83.949	9.769	0.521	19.538	95.437	82.916	84.981	60	105
LOGG	CARN	78	1904	FENC	TR	COHO	2	70	104.929	8.155	0.975	16.310	66.502	102.989	106.868	91	130
LOGG	CARN	78	2604	FENC	TR	COHO	1	463	85.739	8.962	0.416	17.924	80.315	84.914	86.563	62	103
LOGG	CARN	78	2604	FENC	TR	COHO	2	111	104.613	6.977	0.662	13.954	48.676	103.301	105.924	92	125
LOGG	CARN	78	0305	FENC	TR	COHO	1	617	86.254	8.382	0.337	16.764	70.258	85.586	86.923	60	103
LOGG	CARN	78	0305	FENC	TR	COHO	2	123	105.049	7.505	0.677	15.010	56.325	103.709	106.389	92	128
LOGG	CARN	78	1005	FENC	TR	COHO	1	912	87.173	7.948	0.263	15.896	63.171	86.652	87.694	63	106
LOGG	CARN	78	1005	FENC	TR	COHO	2	106	105.509	7.053	0.685	14.105	49.738	104.153	106.866	92	123
LOGG	CARN	78	1705	FENC	TR	COHO	1	520	86.663	7.443	0.326	14.887	55.403	86.017	87.310	64	106
LOGG	CARN	78	1705	FENC	TR	COHO	2	36	100.944	6.748	1.125	13.497	45.540	98.661	103.228	92	119
LOGG	CARN	78	2405	FENC	TR	COHO	1	153	83.954	5.547	0.448	11.094	30.768	83.066	84.842	62	95
LOGG	CARN	78	2405	FENC	TR	COHO	2	30	99.200	9.448	1.725	18.896	89.269	95.681	102.719	87	128
LOGG	CARN	78	3105	FENC	TR	COHO	1	41	83.439	5.844	0.913	11.688	34.152	81.595	85.283	71	93
LOGG	CARN	78	3105	FENC	TR	COHO	2	3	96.000	1.000	0.577	2.000	1.000	93.517	98.483	95	97
LOGG	CARN	78	0706	FENC	TR	COHO	1	16	85.125	5.214	1.303	10.428	27.183	82.349	87.901	78	93
LOGG	CARN	78	0706	FENC	TR	COHO	2	3	109.667	3.215	1.856	6.429	10.333	101.686	117.647	106	112
LOGG	CARN	78	1406	FENC	TR	COHO	1	5	92.000	3.082	1.378	6.164	9.500	88.168	95.832	87	95
LOGG	CARN	78	1406	FENC	TR	COHO	2	5	107.400	9.555	4.273	19.110	91.300	95.521	119.279	101	124
LOGG	CARN	78	0806	2	SPS	COHO	0	202	45.960	4.257	0.299	8.513	18.118	45.367	46.553	38	62
LOGG	CARN	78	0806	2	SPS	COHO	1	6	78.333	7.062	2.883	14.123	49.867	70.924	85.742	66	85
LOGG	CARN	78	0806	3	SPS	COHO	0	363	47.066	4.840	0.254	9.679	23.421	46.563	47.569	34	62
LOGG	CARN	78	0806	3	SPS	COHO	1	17	78.765	8.927	2.165	17.854	79.691	74.175	83.355	65	99
LOGG	CARN	78	0706	4	SPS	COHO	0	346	45.092	5.499	0.296	10.997	30.235	44.507	45.678	35	59
LOGG	CARN	78	0706	4	SPS	COHO	1	41	72.268	8.204	1.281	16.407	67.301	69.680	74.856	60	87
LOGG	CARN	78	0506	5	SPS	COHO	0	131	41.557	2.915	0.255	5.829	8.495	41.053	42.061	35	53
LOGG	CARN	78	0506	5	SPS	COHO	1	41	66.732	5.015	0.783	10.030	25.151	65.150	68.314	58	78

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	78	0706	6	SPS	COHO	0	306	41.480	3.154	0.180	6.308	9.949	41.123	41.837	35	55
LOGG	CARN	78	0706	6	SPS	COHO	1	37	68.541	6.492	1.067	12.984	42.144	66.385	70.696	58	91
LOGG	CARN	78	0506	8	SPS	COHO	0	149	43.034	3.926	0.322	7.851	15.411	42.397	43.670	35	58
LOGG	CARN	78	0506	8	SPS	COHO	1	11	72.545	6.455	1.946	12.911	41.673	68.205	76.886	60	82
LOGG	CARN	78	0706	TOTL	SPS	COHO	1	153	70.863	7.932	0.641	15.865	62.922	69.593	72.133	58	99
LOGG	CARN	78	2507	2	SPS	COHO	0	262	53.508	6.145	0.380	12.290	37.760	52.756	54.259	38	72
LOGG	CARN	78	2507	2	SPS	COHO	1	13	85.692	6.223	1.726	12.447	38.731	81.929	89.455	75	98
LOGG	CARN	78	2507	3	SPS	COHO	0	351	53.524	6.402	0.342	12.803	40.982	52.848	54.201	40	75
LOGG	CARN	78	2507	3	SPS	COHO	1	11	84.364	5.182	1.562	10.364	26.855	80.879	87.848	76	93
LOGG	CARN	78	2607	4	SPS	COHO	0	497	50.871	6.268	0.281	12.536	39.286	50.315	51.428	39	69
LOGG	CARN	78	2607	4	SPS	COHO	1	30	77.067	5.085	0.928	10.170	25.857	75.173	78.961	69	88
LOGG	CARN	78	2607	5	SPS	COHO	0	384	48.375	4.101	0.209	8.201	16.815	47.961	48.789	39	64
LOGG	CARN	78	2607	5	SPS	COHO	1	42	73.381	5.763	0.889	11.527	33.217	71.593	75.168	65	89
LOGG	CARN	78	2707	6	SPS	COHO	0	636	47.758	4.953	0.196	9.907	24.537	47.369	48.147	37	64
LOGG	CARN	78	2707	6	SPS	COHO	1	47	73.340	4.631	0.676	9.262	21.447	71.983	74.698	64	83
LOGG	CARN	78	2707	8	SPS	COHO	0	321	50.785	5.948	0.332	11.897	35.382	50.128	51.442	40	69
LOGG	CARN	78	2707	8	SPS	COHO	1	11	78.273	6.230	1.879	12.461	38.818	74.084	82.462	69	87
LOGG	CARN	78	2607	TOTL	SPS	COHO	1	154	76.260	6.721	0.542	13.442	45.174	75.187	77.332	64	98
LOGG	CARN	78	0510	2	SPS	COHO	0	226	60.987	6.224	0.414	12.447	38.733	60.167	61.806	49	78
LOGG	CARN	78	0510	2	SPS	COHO	1	10	85.000	5.793	1.832	11.585	33.556	80.860	89.140	79	94
LOGG	CARN	78	0510	3	SPS	COHO	0	141	60.823	7.127	0.600	14.253	50.790	59.634	62.011	48	79
LOGG	CARN	78	0510	3	SPS	COHO	1	16	90.500	9.121	2.280	18.243	83.200	85.643	95.357	80	109
LOGG	CARN	78	2609	4	SPS	COHO	0	310	57.813	7.502	0.426	15.003	56.276	56.969	58.657	40	77
LOGG	CARN	78	2609	4	SPS	COHO	1	20	84.700	6.131	1.371	12.262	37.589	81.835	87.565	77	95
LOGG	CARN	78	2009	5	SPS	COHO	0	210	54.381	4.827	0.333	9.654	23.299	53.721	55.040	43	69
LOGG	CARN	78	2009	5	SPS	COHO	1	32	77.313	5.233	0.925	10.466	27.383	75.435	79.190	67	87
LOGG	CARN	78	2609	6	SPS	COHO	0	257	53.475	5.756	0.359	11.512	33.133	52.764	54.186	43	68
LOGG	CARN	78	2609	6	SPS	COHO	1	42	77.286	5.157	0.796	10.315	26.599	75.686	78.885	67	86
LOGG	CARN	78	2009	8	SPS	COHO	0	123	56.398	6.868	0.619	13.737	47.176	55.172	57.625	46	73
LOGG	CARN	78	2009	8	SPS	COHO	1	7	79.714	3.352	1.267	6.705	11.238	76.610	82.819	76	85
LOGG	CARN	78	2709	TOTL	SPS	COHO	1	127	80.866	7.545	0.670	15.090	56.926	79.541	82.192	67	109
LOGG	CARN	78	0706	TOTL	SPS	RBT	0	1	55.000								
LOGG	CARN	78	0706	TOTL	SPS	RBT	1	13	81.462	7.720	2.141	15.441	59.603	76.794	86.129	71	94
LOGG	CARN	78	0706	TOTL	SPS	RBT	2	5	114.400	6.877	3.076	13.755	47.300	105.850	122.950	106	124
LOGG	CARN	78	2607	TOTL	SPS	RBT	0	56	47.607	3.334	0.446	6.668	11.116	46.716	48.498	42	54
LOGG	CARN	78	2607	TOTL	SPS	RBT	1	23	92.304	7.029	1.466	14.057	49.403	89.271	95.338	74	104
LOGG	CARN	78	2607	TOTL	SPS	RBT	2	6	119.000	11.082	4.524	22.163	122.800	107.373	130.627	107	137
LOGG	CARN	78	2709	TOTL	SPS	RBT	0	16	63.688	6.549	1.637	13.099	42.896	60.200	67.175	51	74
LOGG	CARN	78	2709	TOTL	SPS	RBT	1	11	106.636	6.233	1.879	12.467	38.855	102.445	110.827	96	116
LOGG	CARN	78	2709	TOTL	SPS	RBT	2	6	129.500	11.149	4.552	22.298	124.300	117.803	141.197	117	150
LOGG	CARN	78	2709	TOTL	SPS	RBT	3	1	169.000								
LOGG	CARN	78	0706	TOTL	SPS	CT	0	22	31.545	1.438	0.307	2.877	2.069	30.908	32.183	29	34
LOGG	CARN	78	0706	TOTL	SPS	CT	1	11	81.909	8.408	2.535	16.816	70.691	76.256	87.562	71	97
LOGG	CARN	78	0706	TOTL	SPS	CT	2	5	116.000	7.874	3.521	15.748	62.000	106.211	125.789	105	123
LOGG	CARN	78	0706	TOTL	SPS	CT	3	3	150.333	9.815	5.667	19.630	96.333	125.967	174.700	139	156
LOGG	CARN	78	2607	TOTL	SPS	CT	0	110	44.545	4.389	0.418	8.777	19.259	43.717	45.374	30	57
LOGG	CARN	78	2607	TOTL	SPS	CT	1	16	84.875	9.919	2.480	19.838	98.383	79.593	90.157	72	106
LOGG	CARN	78	2607	TOTL	SPS	CT	2	4	123.500	4.123	2.062	8.246	17.000	116.944	130.056	120	128
LOGG	CARN	78	2607	TOTL	SPS	CT	3	6	159.000	13.491	5.508	26.981	182.000	144.846	173.154	142	181
LOGG	CARN	78	2607	TOTL	SPS	CT	4	1	220.000								

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	78	2709	TOTL	SPS	CT	0	104	54.962	6.106	0.599	12.211	37.280	53.776	56.147	44	75
LOGG	CARN	78	2709	TOTL	SPS	CT	1	15	91.600	8.692	2.244	17.383	75.543	86.798	96.402	79	107
LOGG	CARN	78	2709	TOTL	SPS	CT	2	8	134.000	8.435	2.982	16.869	71.143	126.962	141.038	119	145
LOGG	CARN	78	2709	TOTL	SPS	CT	3	3	185.667	26.407	15.246	52.814	697.333	120.108	251.225	157	209
LOGG	CARN	78	0806	2	SPS	ALUT	-	99	64.889	13.376	1.344	26.752	178.916	62.227	67.551	41	99
LOGG	CARN	78	0706	TOTL	SPS	ALUT	-	143	72.357	16.807	1.405	33.614	282.471	69.574	75.139	41	107
LOGG	CARN	78	2507	2	SPS	ALUT	-	211	60.621	12.492	0.860	24.984	156.056	58.918	62.324	34	109
LOGG	CARN	78	2607	TOTL	SPS	ALUT	-	246	64.504	16.642	1.061	33.285	276.969	62.403	66.605	34	135
LOGG	CARN	78	0510	2	SPS	ALUT	-	256	60.109	10.452	0.653	20.905	109.251	58.816	61.403	37	96
LOGG	CARN	78	2709	TOTL	SPS	ALUT	-	334	66.329	16.206	0.887	32.412	262.642	64.574	68.085	37	110
LOGG	CARN	78	0806	2	SPS	ASPR	-	22	82.000	15.517	3.308	31.033	240.762	75.119	88.881	61	117
LOGG	CARN	78	2507	2	SPS	ASPR	-	15	82.267	16.918	4.368	33.835	286.210	72.919	91.614	61	115
LOGG	CARN	78	0510	2	SPS	ASPR	-	10	88.600	13.525	4.277	27.051	182.933	78.934	98.266	73	111
LOGG	CARN	78	2009	1600	S	COHO	0	26	56.577	6.087	1.194	12.174	37.054	54.118	59.036	45	69
LOGG	CARN	78	2009	1600	S	COHO	1	3	82.333	4.041	2.333	8.083	16.333	72.300	92.367	78	86
LOGG	CARN	78	0606	2100	S	CT	1	31	60.548	5.494	0.987	10.989	30.189	58.535	62.562	51	71
LOGG	CARN	78	0606	2100	S	CT	2	17	89.882	14.840	3.599	29.681	220.235	82.252	97.513	72	117
LOGG	CARN	78	0610	2100	S	CT	0	14	53.786	8.011	2.141	16.023	64.181	49.161	58.411	42	67
LOGG	CARN	78	0610	2100	S	CT	1	31	86.613	13.119	2.356	26.238	172.112	81.806	91.420	70	115
LOGG	CARN	78	0610	2100	S	CT	2	4	136.500	9.815	4.907	19.630	96.333	120.894	152.106	122	143
LOGG	CARN	78	0606	UPER	S	CT	1	17	62.882	7.631	1.851	15.262	58.235	58.959	66.806	50	78
LOGG	CARN	78	0606	UPER	S	CT	2	19	95.789	14.744	3.383	29.489	217.398	88.686	102.893	80	130
LOGG	CARN	78	1909	UPER	S	CT	0	15	44.667	3.658	0.944	7.316	13.381	42.645	46.688	36	50
LOGG	CARN	78	1909	UPER	S	CT	1	12	88.833	11.999	3.464	23.997	143.970	81.213	96.454	68	112
LOGG	CARN	78	1909	UPER	S	CT	2	4	117.750	4.573	2.287	9.147	20.917	110.478	125.022	113	124
LOGG	CARN	78	0610	FRED	PS	COHO	0	114	64.175	9.814	0.919	19.627	96.305	62.356	65.995	47	95
LOGG	CARN	78	0610	FRED	PS	ALUT	-	32	43.375	14.522	2.567	29.044	210.887	38.164	48.586	34	109
LOGG	CARN	78	1909	PACH	SPS	COHO	0	137	59.920	8.630	0.737	17.259	74.471	58.460	61.380	45	83
LOGG	CARN	78	1909	PACH	SPS	COHO	1	7	95.571	8.203	3.100	16.406	67.286	87.976	103.167	88	107
LOGG	CARN	78	1909	PACH	SPS	RBT	0	51	52.627	5.016	0.702	10.032	25.158	51.216	54.039	44	68
LOGG	CARN	78	1909	PACH	SPS	RBT	1	2	107.000	4.243	3.000	8.485	18.000	68.870	145.130	104	110
LOGG	CARN	78	1909	PACH	SPS	ALUT	-	112	66.411	12.563	1.187	25.126	157.830	64.060	68.761	42	107
LOGG	CARN	78	1909	PACH	SPS	ASPR	-	73	92.055	20.026	2.344	40.051	401.025	87.391	96.719	64	172
LOGG	CARN	78	3008	USEL	S	COHO	0	25	60.920	8.746	1.749	17.492	76.493	57.317	64.523	48	87
LOGG	CARN	78	3008	USEL	S	CT	0	5	44.200	3.633	1.625	7.266	13.200	39.683	48.717	38	47
LOGG	CARN	78	3008	USEL	S	CT	1	11	88.818	9.516	2.869	19.033	90.564	82.420	95.217	75	106
LOGG	CARN	78	3008	USEL	S	CT	2	3	128.333	14.572	8.413	29.143	212.333	92.158	164.509	112	140
LOGG	CARN	78	3008	USEL	S	ALUT	-	109	68.413	17.568	1.683	35.137	308.652	65.081	71.745	44	114
LOGG	CARN	78	3008	RITH	S	CT	0	16	56.000	9.853	2.488	19.906	99.067	50.700	61.300	44	76
LOGG	CARN	78	3008	RITH	S	CT	1	12	98.833	9.321	2.691	18.642	86.879	92.914	104.753	80	107
LOGG	CARN	78	3008	RITH	S	CT	2	3	129.000	15.588	9.000	31.177	243.000	90.300	167.700	120	147
LOGG	CARN	78	3008	RITH	S	CT	3	1	171.000								

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	79	0406	2	SPS	COHO	0	124	43.266	4.300	0.386	8.600	18.490	42.502	44.031	35	60
LOGG	CARN	79	0406	2	SPS	COHO	1	19	75.579	3.834	0.880	7.669	14.702	73.732	77.426	68	82
LOGG	CARN	79	1306	3	SPS	COHO	0	199	48.568	4.053	0.287	8.106	16.428	47.999	49.137	39	62
LOGG	CARN	79	1306	3	SPS	COHO	1	36	77.000	4.459	0.743	8.919	19.886	75.491	78.509	66	85
LOGG	CARN	79	1306	4	SPS	COHO	0	366	45.036	4.281	0.224	8.561	18.325	44.592	45.479	37	61
LOGG	CARN	79	1306	4	SPS	COHO	1	61	73.607	5.270	0.675	10.541	27.776	72.257	74.956	62	88
LOGG	CARN	79	1106	5	SPS	COHO	0	74	48.365	3.703	0.430	7.407	13.714	47.508	49.222	40	61
LOGG	CARN	79	1106	5	SPS	COHO	1	46	70.152	4.190	0.618	8.380	17.554	68.911	71.394	63	79
LOGG	CARN	79	1206	6	SPS	COHO	0	219	46.443	3.376	0.228	6.751	11.395	45.991	46.895	39	56
LOGG	CARN	79	1206	6	SPS	COHO	1	28	68.393	3.994	0.755	7.988	15.951	66.846	69.940	62	78
LOGG	CARN	79	1206	8	SPS	COHO	0	146	44.466	4.434	0.367	8.867	19.657	43.739	45.192	37	61
LOGG	CARN	79	1206	8	SPS	COHO	1	14	76.286	4.906	1.311	9.811	24.066	73.454	79.118	68	84
LOGG	CARN	79	1106	TOTL	SPS	COHO	1	204	73.078	5.438	0.381	10.876	29.570	72.325	73.832	62	88
LOGG	CARN	79	2407	2	SPS	COHO	0	257	51.101	5.468	0.341	10.935	29.896	50.426	51.776	42	68
LOGG	CARN	79	2407	2	SPS	COHO	1	20	76.950	6.871	1.536	13.742	47.208	73.739	80.161	67	90
LOGG	CARN	79	2407	3	SPS	COHO	0	212	56.708	5.158	0.354	10.316	26.606	56.006	57.409	45	74
LOGG	CARN	79	2407	3	SPS	COHO	1	36	80.111	5.518	0.920	11.035	30.444	78.244	81.978	70	89
LOGG	CARN	79	2507	4	SPS	COHO	0	529	51.616	5.517	0.240	11.033	30.434	51.141	52.091	39	68
LOGG	CARN	79	2507	4	SPS	COHO	1	51	78.686	5.175	0.725	10.350	26.780	77.230	80.143	68	92
LOGG	CARN	79	2507	5	SPS	COHO	0	89	55.472	4.806	0.509	9.611	23.093	54.458	56.486	41	66
LOGG	CARN	79	2507	5	SPS	COHO	1	26	74.000	4.118	0.808	8.237	16.960	72.336	75.664	68	82
LOGG	CARN	79	2607	6	SPS	COHO	0	182	53.978	4.150	0.308	8.301	17.226	53.369	54.587	44	64
LOGG	CARN	79	2607	6	SPS	COHO	1	12	75.333	4.355	1.257	8.711	18.970	72.567	78.099	70	82
LOGG	CARN	79	2607	8	SPS	COHO	0	626	49.091	5.010	0.200	10.019	25.097	48.695	49.488	41	68
LOGG	CARN	79	2607	8	SPS	COHO	1	8	80.875	3.603	1.274	7.206	12.982	77.869	83.881	75	84
LOGG	CARN	79	2507	TOTL	SPS	COHO	1	153	77.850	5.617	0.454	11.234	31.550	76.951	78.749	67	92
LOGG	CARN	79	2009	2	SPS	COHO	0	288	57.351	5.795	0.342	11.591	33.587	56.675	58.027	45	72
LOGG	CARN	79	2009	2	SPS	COHO	1	40	79.525	5.598	0.885	11.195	31.333	77.737	81.313	71	92
LOGG	CARN	79	2009	3	SPS	COHO	0	236	61.886	5.210	0.339	10.419	27.140	61.214	62.557	46	74
LOGG	CARN	79	2009	3	SPS	COHO	1	43	81.953	5.777	0.881	11.555	33.379	80.183	83.724	73	97
LOGG	CARN	79	1909	4	SPS	COHO	0	488	57.029	5.819	0.263	11.639	33.864	56.508	57.550	41	73
LOGG	CARN	79	1909	4	SPS	COHO	1	45	81.800	5.687	0.848	11.375	32.345	80.096	83.504	73	95
LOGG	CARN	79	1909	5	SPS	COHO	0	66	62.652	4.291	0.528	8.583	18.415	61.600	63.703	49	71
LOGG	CARN	79	1909	5	SPS	COHO	1	23	78.652	3.845	0.802	7.690	14.783	76.993	80.312	72	85
LOGG	CARN	79	1809	6	SPS	COHO	0	187	60.733	4.718	0.345	9.436	22.261	60.049	61.416	45	70
LOGG	CARN	79	1809	6	SPS	COHO	1	23	74.217	3.089	0.644	6.178	9.542	72.884	75.551	70	81
LOGG	CARN	79	1809	8	SPS	COHO	0	394	55.071	5.754	0.290	11.508	33.109	54.497	55.645	44	70
LOGG	CARN	79	1809	8	SPS	COHO	1	15	79.667	6.433	1.661	12.866	41.381	76.112	83.221	72	93
LOGG	CARN	79	1909	TOTL	SPS	COHO	1	189	79.878	5.784	0.421	11.569	33.459	79.045	80.711	70	97
LOGG	CARN	79	1106	TOTL	SPS	RBT	1	12	85.667	9.208	2.658	18.416	84.788	79.819	91.515	77	109
LOGG	CARN	79	1106	TOTL	SPS	RBT	2	5	109.200	7.294	3.262	14.588	53.200	100.132	118.268	100	117
LOGG	CARN	79	2507	TOTL	SPS	RBT	1	7	96.571	11.731	4.434	23.462	137.619	85.708	107.435	83	117
LOGG	CARN	79	2507	TOTL	SPS	RBT	2	1	115.000								
LOGG	CARN	79	1909	TOTL	SPS	RBT	2	4	124.750	4.272	2.136	8.544	18.250	117.958	131.542	120	130
LOGG	CARN	79	1106	TOTL	SPS	CT	0	2	25.500	0.707	0.500	1.414	0.500	19.145	31.855	25	26
LOGG	CARN	79	1106	TOTL	SPS	CT	1	9	89.778	13.618	4.539	27.236	185.444	79.292	100.263	74	111
LOGG	CARN	79	1106	TOTL	SPS	CT	2	6	110.833	14.247	5.816	28.493	202.967	95.886	125.781	96	132
LOGG	CARN	79	1106	TOTL	SPS	CT	3	1	155.000								
LOGG	CARN	79	2507	TOTL	SPS	CT	0	79	40.696	3.310	0.372	6.621	10.958	39.955	41.437	31	49
LOGG	CARN	79	2507	TOTL	SPS	CT	1	6	95.000	9.209	3.759	18.417	84.800	85.338	104.662	84	109

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	79	2507	TOTL	SPS	CT	2	4	131.500	7.724	3.862	15.449	59.667	119.218	143.782	124	142
LOGG	CARN	79	2507	TOTL	SPS	CT	3	2	190.500	10.607	7.500	21.213	112.500	95.175	285.825	183	198
LOGG	CARN	79	1909	TOTL	SPS	CT	0	37	53.270	4.221	0.694	8.441	17.814	51.869	54.672	44	63
LOGG	CARN	79	1909	TOTL	SPS	CT	1	11	96.455	10.903	3.287	21.806	118.873	89.124	103.785	81	113
LOGG	CARN	79	1909	TOTL	SPS	CT	2	1	140.000								
LOGG	CARN	79	0406	2	SPS	ALUT	-	181	62.785	9.985	0.742	19.970	99.703	61.315	64.254	45	102
LOGG	CARN	79	1106	TOTL	SPS	ALUT	-	238	68.731	15.479	1.003	30.958	239.607	66.744	70.718	45	111
LOGG	CARN	79	2407	2	SPS	ALUT	-	113	66.965	10.543	0.992	21.086	111.159	65.001	68.928	41	100
LOGG	CARN	79	2507	TOTL	SPS	ALUT	-	168	71.571	13.554	1.046	27.109	183.719	69.501	73.642	41	108
LOGG	CARN	79	2009	2	SPS	ALUT	-	108	71.694	10.154	0.977	20.309	103.111	69.760	73.629	51	100
LOGG	CARN	79	1909	TOTL	SPS	ALUT	-	173	75.555	12.471	0.948	24.941	155.516	73.678	77.432	51	110
LOGG	CARN	79	0406	2	SPS	ASPR	-	13	90.231	14.278	3.960	28.556	203.859	81.598	98.864	65	118
LOGG	CARN	79	2407	2	SPS	ASPR	-	18	87.500	15.336	3.615	30.673	235.206	79.873	95.127	64	119
LOGG	CARN	79	2009	2	SPS	ASPR	-	15	90.267	16.714	4.315	33.428	279.352	81.032	99.502	64	110
LOGG	CARN	79	2607	1600	S	COHO	0	26	52.885	4.208	0.825	8.416	17.706	51.185	54.585	43	61
LOGG	CARN	79	2607	1600	S	COHO	1	31	72.806	5.958	1.070	11.915	35.495	70.624	74.989	65	85
LOGG	CARN	79	1909	1600	S	COHO	0	29	63.724	6.041	1.122	12.082	36.493	61.425	66.024	54	74
LOGG	CARN	79	1909	1600	S	COHO	1	14	81.214	4.775	1.276	9.549	22.797	78.458	83.971	76	91
LOGG	CARN	79	1406	UPER	S	CT	1	27	65.815	6.662	1.282	13.325	44.387	63.174	68.456	51	75
LOGG	CARN	79	1406	UPER	S	CT	2	21	98.857	9.986	2.179	19.973	99.729	94.303	103.412	87	125
LOGG	CARN	79	1406	UPER	S	CT	3	5	131.200	7.463	3.338	14.926	55.700	121.921	140.479	120	137
LOGG	CARN	79	1010	UPER	S	CT	0	37	48.757	4.740	0.779	9.480	22.467	47.183	50.331	37	58
LOGG	CARN	79	1010	UPER	S	CT	1	31	88.000	10.733	1.928	21.466	115.200	84.067	91.933	65	108
LOGG	CARN	79	1010	UPER	S	CT	2	6	131.000	8.832	3.606	17.664	78.000	121.734	140.266	118	144
LOGG	CARN	79	1010	UPER	S	CT	3	1	157.000								
LOGG	CARN	79	1106	2100	S	CT	1	13	76.692	9.313	2.583	18.626	86.731	71.061	82.323	58	95
LOGG	CARN	79	1106	2100	S	CT	2	5	101.200	10.640	4.758	21.279	113.200	87.972	114.428	92	117
LOGG	CARN	79	1709	2100	S	CT	0	3	59.333	2.517	1.453	5.033	6.333	53.086	65.581	57	62
LOGG	CARN	79	1709	2100	S	CT	1	10	92.200	10.315	3.262	20.630	106.400	84.828	99.572	77	108
LOGG	CARN	79	1709	2100	S	CT	2	4	122.000	8.367	4.183	16.733	70.000	108.697	135.303	115	133
LOGG	CARN	79	2403	FENC	TR	CHUM	0	65	44.385	1.155	0.143	2.310	1.334	44.100	44.670	41	46
LOGG	CARN	79	1504	FENC	TR	CHUM	0	51	40.980	0.761	0.107	1.523	0.580	40.766	41.195	39	42
LOGG	CARN	79	2104	FENC	TR	CHUM	0	52	41.288	0.977	0.135	1.954	0.954	41.018	41.559	39	43
LOGG	CARN	79	0305	FENC	TR	CHUM	0	17	41.353	1.169	0.284	2.339	1.368	40.752	41.954	39	43
LOGG	CARN	79	2403	FENC	TR	COHO	0	48	36.313	0.903	0.130	1.806	0.815	36.051	36.574	33	38
LOGG	CARN	79	0204	FENC	TR	COHO	0	54	34.981	1.339	0.182	2.677	1.792	34.617	35.346	33	38
LOGG	CARN	79	1304	FENC	TR	COHO	0	50	37.020	1.253	0.177	2.507	1.571	36.664	37.376	34	39
LOGG	CARN	79	2104	FENC	TR	COHO	0	50	38.180	0.720	0.102	1.439	0.518	37.975	38.385	36	39
LOGG	CARN	79	0205	FENC	TR	COHO	0	50	37.260	1.065	0.151	2.131	1.135	36.957	37.563	36	43
LOGG	CARN	79	1805	FENC	TR	COHO	0	40	41.700	3.709	0.586	7.417	13.754	40.516	42.884	38	49
LOGG	CARN	79	0506	FENC	TR	COHO	0	28	46.500	4.150	0.784	8.300	17.222	44.892	48.108	38	56
LOGG	CARN	79	1107	FENC	TR	COHO	0	183	50.672	4.472	0.331	8.945	20.002	50.018	51.327	40	62
LOGG	CARN	79	2303	FENC	TR	COHO	1	12	70.250	3.841	1.109	7.681	14.750	67.811	72.689	64	78
LOGG	CARN	79	2303	FENC	TR	COHO	2	1	82.000								
LOGG	CARN	79	2803	FENC	TR	COHO	1	46	70.848	4.512	0.665	9.023	20.354	69.511	72.185	61	81
LOGG	CARN	79	2803	FENC	TR	COHO	2	10	84.000	7.055	2.231	14.111	49.778	78.958	89.042	72	99
LOGG	CARN	79	0404	FENC	TR	COHO	1	102	71.765	5.640	0.558	11.279	31.805	70.659	72.870	60	87
LOGG	CARN	79	0404	FENC	TR	COHO	2	11	89.273	6.665	2.009	13.329	44.418	84.792	93.754	79	98
LOGG	CARN	79	1104	FENC	TR	COHO	1	423	76.073	8.046	0.391	16.091	64.732	75.299	76.848	60	103
LOGG	CARN	79	1104	FENC	TR	COHO	2	60	93.667	10.840	1.399	21.681	117.514	90.868	96.466	77	127

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	79	1804	FENC	TR	COHO	1	357	77.627	8.576	0.454	17.151	73.543	76.729	78.526	60	102
LOGG	CARN	79	1804	FENC	TR	COHO	2	82	93.634	8.626	0.953	17.252	74.408	91.739	95.530	77	110
LOGG	CARN	79	2504	FENC	TR	COHO	1	407	79.572	7.503	0.372	15.005	56.280	78.836	80.309	60	95
LOGG	CARN	79	2504	FENC	TR	COHO	2	112	98.393	7.568	0.715	15.135	57.268	96.977	99.809	85	120
LOGG	CARN	79	0205	FENC	TR	COHO	1	641	84.495	8.485	0.335	16.969	71.988	83.831	85.158	60	107
LOGG	CARN	79	0205	FENC	TR	COHO	2	271	97.280	8.880	0.539	17.761	78.862	96.212	98.349	81	127
LOGG	CARN	79	0905	FENC	TR	COHO	1	345	83.026	7.949	0.428	15.897	63.182	82.179	83.873	60	107
LOGG	CARN	79	0905	FENC	TR	COHO	2	90	94.878	9.401	0.991	18.802	88.378	92.906	96.850	81	118
LOGG	CARN	79	1605	FENC	TR	COHO	1	272	84.658	6.550	0.397	13.099	42.897	83.872	85.444	68	102
LOGG	CARN	79	1605	FENC	TR	COHO	2	44	99.818	6.449	0.972	12.899	41.594	97.864	101.772	90	111
LOGG	CARN	79	2305	FENC	TR	COHO	1	112	83.196	6.657	0.629	13.315	44.321	81.951	84.442	62	95
LOGG	CARN	79	2305	FENC	TR	COHO	2	5	99.800	2.280	1.020	4.561	5.200	96.965	102.635	97	102
LOGG	CARN	79	3005	FENC	TR	COHO	1	33	85.455	7.571	1.318	15.142	57.318	82.779	88.130	60	95
LOGG	CARN	79	3005	FENC	TR	COHO	2	3	98.333	2.082	1.202	4.163	4.333	93.165	103.501	96	100
LOGG	CARN	79	0606	FENC	TR	COHO	1	12	83.833	7.907	2.282	15.813	62.515	78.812	88.855	74	99
LOGG	CARN	79	0606	FENC	TR	COHO	2	8	100.000	4.690	1.658	9.381	22.000	96.086	103.914	95	106
LOGG	CARN	79	1408	FRED	SPS	COHO	0	158	64.076	7.449	0.593	14.898	55.485	62.903	65.249	40	83
LOGG	CARN	79	1408	FRED	SPS	RBT	0	25	52.160	5.640	1.128	11.279	31.807	49.836	54.484	42	65
LOGG	CARN	79	1408	FRED	SPS	ALUT	-	83	30.928	3.294	0.362	6.587	10.848	30.208	31.647	27	53
LOGG	CARN	79	1408	FRED	SPS	ASPR	-	43	77.279	16.163	2.465	32.327	261.254	72.325	82.233	41	110
LOGG	CARN	79	1508	PACH	SPS	COHO	0	420	48.502	6.032	0.294	12.063	36.379	47.920	49.085	40	73
LOGG	CARN	79	1508	PACH	SPS	COHO	1	20	88.800	4.851	1.085	9.703	23.537	86.533	91.067	79	98
LOGG	CARN	79	1508	PACH	SPS	RBT	0	97	48.309	4.485	0.455	8.969	20.112	47.408	49.211	36	60
LOGG	CARN	79	1508	PACH	SPS	RBT	1	7	90.429	4.577	1.730	9.155	20.952	86.190	94.667	84	97
LOGG	CARN	79	1508	PACH	SPS	ALUT	-	54	66.241	10.626	1.446	21.251	112.903	63.349	69.133	48	91
LOGG	CARN	79	1508	PACH	SPS	ASPR	-	69	89.652	17.257	2.077	34.513	297.789	85.518	93.786	62	142
LOGG	CARN	79	1608	USEL	S	COHO	0	68	58.691	6.741	0.817	13.482	45.441	57.064	60.318	42	73
LOGG	CARN	79	1608	USEL	S	CT	0	22	45.045	4.445	0.948	8.890	19.760	43.074	47.017	35	52
LOGG	CARN	79	1608	USEL	S	CT	1	3	86.667	1.155	0.667	2.309	1.333	83.800	89.533	86	88
LOGG	CARN	79	1608	USEL	S	CT	2	1	102.000								
LOGG	CARN	79	1608	USEL	S	ALUT	-	123	65.886	16.115	1.453	32.230	259.692	63.009	68.763	44	122
LOGG	CARN	79	1608	USEL	S	ASPR	-	3	90.333	17.010	9.821	34.020	289.333	48.105	132.562	73	107
LOGG	CARN	79	1308	RITH	S	CT	0	22	52.864	5.285	1.127	10.570	27.933	50.520	55.207	45	63
LOGG	CARN	79	1308	RITH	S	CT	1	4	107.000	5.774	2.887	11.547	33.333	97.820	116.180	100	114
LOGG	CARN	79	1308	RITH	S	CT	2	6	126.833	14.317	5.845	28.633	204.967	111.812	141.854	111	150
LOGG	CARN	79	1308	RITH	S	CT	3	2	185.000	32.527	23.000	65.054	1058.000	-107.330	477.330	162	208

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	80	0304	FENC	TR	CHUM	0	57	41.719	1.082	0.143	2.163	1.170	41.433	42.006	38	44
LOGG	CARN	80	1803	FENC	TR	COHO	0	61	38.000	1.528	0.196	3.055	2.333	37.609	38.391	34	40
LOGG	CARN	80	2703	FENC	TR	COHO	0	46	38.174	1.495	0.220	2.990	2.236	37.731	38.617	35	41
LOGG	CARN	80	0304	FENC	TR	COHO	0	172	37.692	1.504	0.115	3.007	2.261	37.465	37.919	35	43
LOGG	CARN	80	1204	FENC	TR	COHO	0	52	37.500	1.245	0.173	2.489	1.549	37.155	37.845	35	40
LOGG	CARN	80	2304	FENC	TR	COHO	0	62	37.129	2.265	0.288	4.530	5.131	36.557	37.701	33	45
LOGG	CARN	80	0305	FENC	TR	COHO	0	25	36.800	0.707	0.141	1.414	0.500	36.509	37.091	35	38
LOGG	CARN	80	1205	FENC	TR	COHO	0	17	38.588	2.320	0.563	4.640	5.382	37.395	39.781	36	44
LOGG	CARN	80	2205	FENC	TR	COHO	0	63	37.984	1.611	0.203	3.223	2.597	37.580	38.388	34	46
LOGG	CARN	80	0206	FENC	TR	COHO	0	16	39.125	2.964	0.741	5.927	8.783	37.547	40.703	34	44
LOGG	CARN	80	0906	FENC	TR	COHO	0	49	38.245	2.278	0.325	4.556	5.189	37.591	38.899	32	45
LOGG	CARN	80	1206	FENC	TR	COHO	0	56	39.821	2.992	0.400	5.983	8.949	39.022	40.621	34	52
LOGG	CARN	80	2406	FENC	TR	COHO	0	75	41.160	2.455	0.284	4.910	6.028	40.596	41.724	37	47
LOGG	CARN	80	0207	FENC	TR	COHO	0	138	41.333	2.965	0.252	5.931	8.793	40.834	41.833	35	51
LOGG	CARN	80	1107	FENC	TR	COHO	0	49	41.939	2.221	0.317	4.442	4.934	41.301	42.577	38	48
LOGG	CARN	80	2003	FENC	TR	COHO	1	47	71.936	4.650	0.678	9.301	21.626	70.573	73.300	63	81
LOGG	CARN	80	2003	FENC	TR	COHO	2	5	89.400	2.302	1.030	4.604	5.300	86.538	92.262	87	93
LOGG	CARN	80	2603	FENC	TR	COHO	1	32	74.375	5.999	1.060	11.997	35.984	72.222	76.528	63	89
LOGG	CARN	80	2603	FENC	TR	COHO	2	5	93.600	8.473	3.789	16.947	71.800	83.065	104.135	85	104
LOGG	CARN	80	0204	FENC	TR	COHO	1	92	75.707	6.391	0.666	12.782	40.847	74.387	77.026	60	91
LOGG	CARN	80	0204	FENC	TR	COHO	2	6	94.667	12.533	5.116	25.065	157.067	81.517	107.816	84	119
LOGG	CARN	80	0904	FENC	TR	COHO	1	207	76.681	8.188	0.569	16.376	67.043	75.554	77.808	60	96
LOGG	CARN	80	0904	FENC	TR	COHO	2	30	94.933	10.272	1.875	20.544	105.513	91.108	98.759	78	115
LOGG	CARN	80	1604	FENC	TR	COHO	1	324	77.793	8.177	0.454	16.355	66.870	76.894	78.693	60	96
LOGG	CARN	80	1604	FENC	TR	COHO	2	97	102.959	13.819	1.403	27.639	190.977	100.181	105.737	78	183
LOGG	CARN	80	2304	FENC	TR	COHO	1	317	84.044	9.769	0.549	19.539	95.441	82.958	85.131	60	108
LOGG	CARN	80	2304	FENC	TR	COHO	2	171	105.731	10.235	0.783	20.471	104.763	104.181	107.281	82	138
LOGG	CARN	80	3004	FENC	TR	COHO	1	1033	88.896	10.002	0.311	20.005	100.048	88.380	89.612	63	110
LOGG	CARN	80	3004	FENC	TR	COHO	2	364	106.407	8.135	0.426	16.270	66.181	105.562	107.251	94	134
LOGG	CARN	80	0705	FENC	TR	COHO	1	869	88.168	8.712	0.296	17.423	75.891	87.583	88.753	60	114
LOGG	CARN	80	0705	FENC	TR	COHO	2	207	103.845	8.538	0.593	17.076	72.898	102.670	105.020	89	126
LOGG	CARN	80	1405	FENC	TR	COHO	1	303	85.234	8.040	0.462	16.080	64.644	84.320	86.149	60	113
LOGG	CARN	80	1405	FENC	TR	COHO	2	44	102.182	8.024	1.210	16.048	64.385	99.750	104.613	89	117
LOGG	CARN	80	2105	FENC	TR	COHO	1	197	87.452	8.710	0.621	17.420	75.861	86.223	88.680	63	105
LOGG	CARN	80	2105	FENC	TR	COHO	2	27	107.370	13.457	2.590	26.914	181.088	102.035	112.705	85	148
LOGG	CARN	80	2805	FENC	TR	COHO	1	28	86.286	7.241	1.368	14.482	52.434	83.480	89.091	69	105
LOGG	CARN	80	0406	FENC	TR	COHO	1	4	80.250	4.272	2.136	8.544	18.250	73.458	87.042	75	85
LOGG	CARN	80	1106	FENC	TR	COHO	1	4	85.000	9.092	4.546	18.184	82.667	70.544	99.456	73	93
LOGG	CARN	80	2207	2	SPS	COHO	0	256	46.977	5.799	0.362	11.597	33.623	46.259	47.694	36	64
LOGG	CARN	80	2207	2	SPS	COHO	1	38	72.132	5.738	0.931	11.477	32.928	70.251	74.012	64	90
LOGG	CARN	80	2207	3	SPS	COHO	0	868	49.152	6.636	0.346	13.272	44.037	48.467	49.837	36	71
LOGG	CARN	80	2207	3	SPS	COHO	1	38	78.921	10.318	1.674	20.635	106.453	75.540	82.302	65	108
LOGG	CARN	80	2407	4	SPS	COHO	0	718	47.428	5.765	0.215	11.531	33.238	47.002	47.854	37	63
LOGG	CARN	80	2407	4	SPS	COHO	1	66	73.439	7.455	0.918	14.909	55.573	71.613	75.265	60	91
LOGG	CARN	80	2407	5	SPS	COHO	0	311	46.000	4.984	0.283	9.969	24.845	45.440	46.560	36	64
LOGG	CARN	80	2407	5	SPS	COHO	1	13	76.692	6.223	1.726	12.447	38.731	72.929	80.455	66	87
LOGG	CARN	80	2307	6	SPS	COHO	0	557	45.761	5.603	0.237	11.205	31.391	45.291	46.231	36	67
LOGG	CARN	80	2307	6	SPS	COHO	1	18	78.000	5.841	1.377	11.682	34.118	75.095	80.905	68	86
LOGG	CARN	80	2307	8	SPS	COHO	0	546	47.535	4.957	0.212	9.915	24.576	47.115	47.955	37	65
LOGG	CARN	80	2307	8	SPS	COHO	1	38	75.947	6.853	1.112	13.707	46.970	73.702	78.193	65	103

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	80	2307	TOTL	SPS	COHO	1	211	75.232	7.817	0.538	15.634	61.103	74.167	76.298	60	108
LOGG	CARN	80	1609	2	SPS	COHO	0	283	53.159	5.745	0.341	11.489	32.999	52.483	53.835	40	68
LOGG	CARN	80	1609	2	SPS	COHO	1	47	73.489	7.703	1.124	15.407	59.342	71.231	75.748	61	95
LOGG	CARN	80	1609	3	SPS	COHO	0	300	54.283	6.201	0.358	12.403	38.458	53.574	54.992	39	70
LOGG	CARN	80	1609	3	SPS	COHO	1	55	77.655	10.045	1.354	20.089	100.897	74.946	80.363	62	99
LOGG	CARN	80	1709	4	SPS	COHO	0	637	50.432	6.519	0.258	13.037	42.491	49.920	50.943	38	69
LOGG	CARN	80	1709	4	SPS	COHO	1	62	76.339	6.978	0.886	13.955	48.687	74.575	78.102	61	90
LOGG	CARN	80	1709	5	SPS	COHO	0	286	49.465	5.779	0.342	11.559	33.401	48.788	50.142	37	69
LOGG	CARN	80	1709	5	SPS	COHO	1	22	76.364	10.395	2.216	20.790	108.052	71.754	80.973	61	94
LOGG	CARN	80	1809	6	SPS	COHO	0	410	50.637	6.038	0.298	12.077	36.462	50.046	51.227	38	70
LOGG	CARN	80	1809	6	SPS	COHO	1	16	79.750	5.745	1.436	11.489	33.000	76.691	82.809	71	88
LOGG	CARN	80	1809	8	SPS	COHO	0	601	52.636	5.390	0.220	10.781	29.055	52.200	53.071	40	69
LOGG	CARN	80	1809	8	SPS	COHO	1	49	78.082	5.450	0.779	10.900	29.702	76.517	79.647	71	92
LOGG	CARN	80	1709	TOTL	SPS	COHO	0	2519	51.663	6.190	0.123	12.380	38.317	51.418	51.907	37	71
LOGG	CARN	80	1709	TOTL	SPS	COHO	1	248	76.653	8.031	0.510	16.063	64.503	75.643	77.663	61	99
LOGG	CARN	80	2307	TOTL	SPS	RBT	0	13	41.538	1.713	0.475	3.427	2.936	40.502	42.574	38	45
LOGG	CARN	80	2307	TOTL	SPS	RBT	1	2	92.500	2.121	1.500	4.243	4.500	73.435	111.565	91	94
LOGG	CARN	80	2307	TOTL	SPS	RBT	2	1	124.000								
LOGG	CARN	80	2307	TOTL	SPS	RBT	3	2	192.500	13.435	9.500	26.870	180.500	71.755	313.245	183	202
LOGG	CARN	80	1709	TOTL	SPS	RBT	0	28	67.964	5.660	1.070	11.320	32.036	65.772	70.157	59	80
LOGG	CARN	80	1709	TOTL	SPS	RBT	1	2	98.000	4.243	3.000	8.485	18.000	59.870	136.130	95	101
LOGG	CARN	80	1709	TOTL	SPS	RBT	2	3	156.000	25.239	14.572	50.478	637.000	93.342	218.658	129	179
LOGG	CARN	80	2307	TOTL	SPS	CT	0	16	32.688	1.702	0.425	3.403	2.896	31.781	33.594	30	36
LOGG	CARN	80	2307	TOTL	SPS	CT	1	14	94.071	9.236	2.468	18.472	85.302	88.740	99.403	79	107
LOGG	CARN	80	2307	TOTL	SPS	CT	2	3	128.333	21.032	12.143	42.063	442.333	76.120	180.547	108	150
LOGG	CARN	80	1709	TOTL	SPS	CT	0	26	52.346	4.335	0.850	8.671	18.795	50.595	54.098	40	62
LOGG	CARN	80	1709	TOTL	SPS	CT	1	18	99.667	9.049	2.133	18.098	81.882	95.166	104.167	84	120
LOGG	CARN	80	1709	TOTL	SPS	CT	2	7	139.857	14.519	5.488	29.039	210.810	126.412	153.302	121	157
LOGG	CARN	80	1709	TOTL	SPS	CT	3	2	171.500	4.950	3.500	9.899	24.500	127.015	215.985	168	175
LOGG	CARN	80	2207	2	SPS	ALUT	-	94	66.787	11.860	1.223	23.720	140.664	64.365	69.209	44	95
LOGG	CARN	80	2307	TOTL	SPS	ALUT	-	201	68.886	14.178	1.000	28.355	201.002	66.906	70.866	44	112
LOGG	CARN	80	1609	2	SPS	ALUT	-	84	69.810	12.281	1.340	24.563	150.831	67.143	72.476	48	92
LOGG	CARN	80	1709	TOTL	SPS	ALUT	-	191	75.016	14.373	1.040	28.747	206.594	72.956	77.075	48	115
LOGG	CARN	80	2207	2	SPS	ASPR	-	25	86.840	16.540	3.308	33.079	273.557	80.026	93.654	68	130
LOGG	CARN	80	1609	2	SPS	ASPR	-	19	94.526	14.181	3.256	28.381	201.374	87.690	101.363	72	120
LOGG	CARN	80	3107	1600	S	COHO	0	65	49.046	6.772	0.840	13.544	45.857	47.375	50.718	38	65
LOGG	CARN	80	3107	1600	S	COHO	1	2	73.500	4.950	3.500	9.899	24.500	29.015	117.985	70	77
LOGG	CARN	80	1709	1600	S	COHO	0	74	51.622	7.250	0.843	14.501	52.567	49.944	53.299	38	71
LOGG	CARN	80	1709	1600	S	COHO	1	2	77.000	4.243	3.000	8.485	18.000	38.870	115.130	74	80
LOGG	CARN	80	1509	2100	S	CT	0	21	62.381	5.844	1.275	11.687	34.148	59.716	65.046	49	71
LOGG	CARN	80	1509	2100	S	CT	1	4	105.000	7.257	3.629	14.514	52.667	93.461	116.539	95	112
LOGG	CARN	80	1509	2100	S	CT	2	3	121.000	9.644	5.568	19.287	93.000	97.059	144.941	114	132
LOGG	CARN	80	2409	UPER	S	CT	0	35	46.029	8.604	1.454	17.208	74.029	43.076	48.981	32	66
LOGG	CARN	80	2409	UPER	S	CT	1	28	88.143	11.787	2.228	23.575	138.942	83.576	92.709	71	108
LOGG	CARN	80	2409	UPER	S	CT	2	10	126.800	12.044	3.809	24.089	145.067	118.192	135.408	110	147
LOGG	CARN	80	2008	PACH	SPS	COHO	0	330	52.924	7.216	0.397	14.432	52.070	52.138	53.711	40	72
LOGG	CARN	80	2008	PACH	SPS	COHO	1	17	86.765	8.664	2.101	17.328	75.066	82.310	91.220	74	104
LOGG	CARN	80	2008	PACH	SPS	RBT	0	61	46.262	5.639	0.722	11.278	31.797	44.818	47.706	38	64
LOGG	CARN	80	2008	PACH	SPS	RBT	1	11	107.545	11.784	3.553	23.569	138.873	99.622	115.469	95	127
LOGG	CARN	80	2008	PACH	SPS	RBT	2	1	144.000								

ID	STREAM	YEAR	DATE	LOC	GEAR	SPEC	AGE	N	XBAR	S	SXBAR	2S	S*S	C.I.MIN	C.I.MAX	RANGE MIN	RANGE MAX
LOGG	CARN	80	2008	PACH	SPS	RBT	4	1	221.000								
LOGG	CARN	80	2008	PACH	SPS	ALUT	-	45	64.844	16.590	2.473	33.180	275.225	59.874	69.815	47	126
LOGG	CARN	80	2008	PACH	SPS	ASPR	-	81	80.198	23.090	2.566	46.179	533.135	75.092	85.303	43	174
LOGG	CARN	80	1908	USEL	S	COHO	0	58	55.931	7.789	1.023	15.577	60.662	53.886	57.976	40	73
LOGG	CARN	80	1908	USEL	S	CT	0	7	41.000	3.000	1.134	6.000	9.000	38.222	43.778	37	45
LOGG	CARN	80	1908	USEL	S	CT	1	15	85.600	7.753	2.002	15.507	60.114	81.316	89.884	70	103
LOGG	CARN	80	1908	USEL	S	CT	2	2	118.000	1.414	1.000	2.828	2.000	105.290	130.710	117	119
LOGG	CARN	80	1908	USEL	S	ALUT	-	39	64.462	12.857	2.059	25.714	165.308	60.303	68.620	40	104
LOGG	CARN	80	1908	USEL	S	ASPR	-	7	73.429	7.480	2.827	14.960	55.952	66.502	80.355	64	86
LOGG	CARN	80	2108	RITH	S	CT	0	29	54.483	9.398	1.745	18.797	88.330	50.905	58.061	39	70
LOGG	CARN	80	2108	RITH	S	CT	1	9	106.778	12.019	4.006	24.037	144.444	97.524	116.032	89	130
LOGG	CARN	80	2108	RITH	S	CT	2	1	168.000								
LOGG	CARN	80	2108	RITH	S	CT	3	1	200.000								